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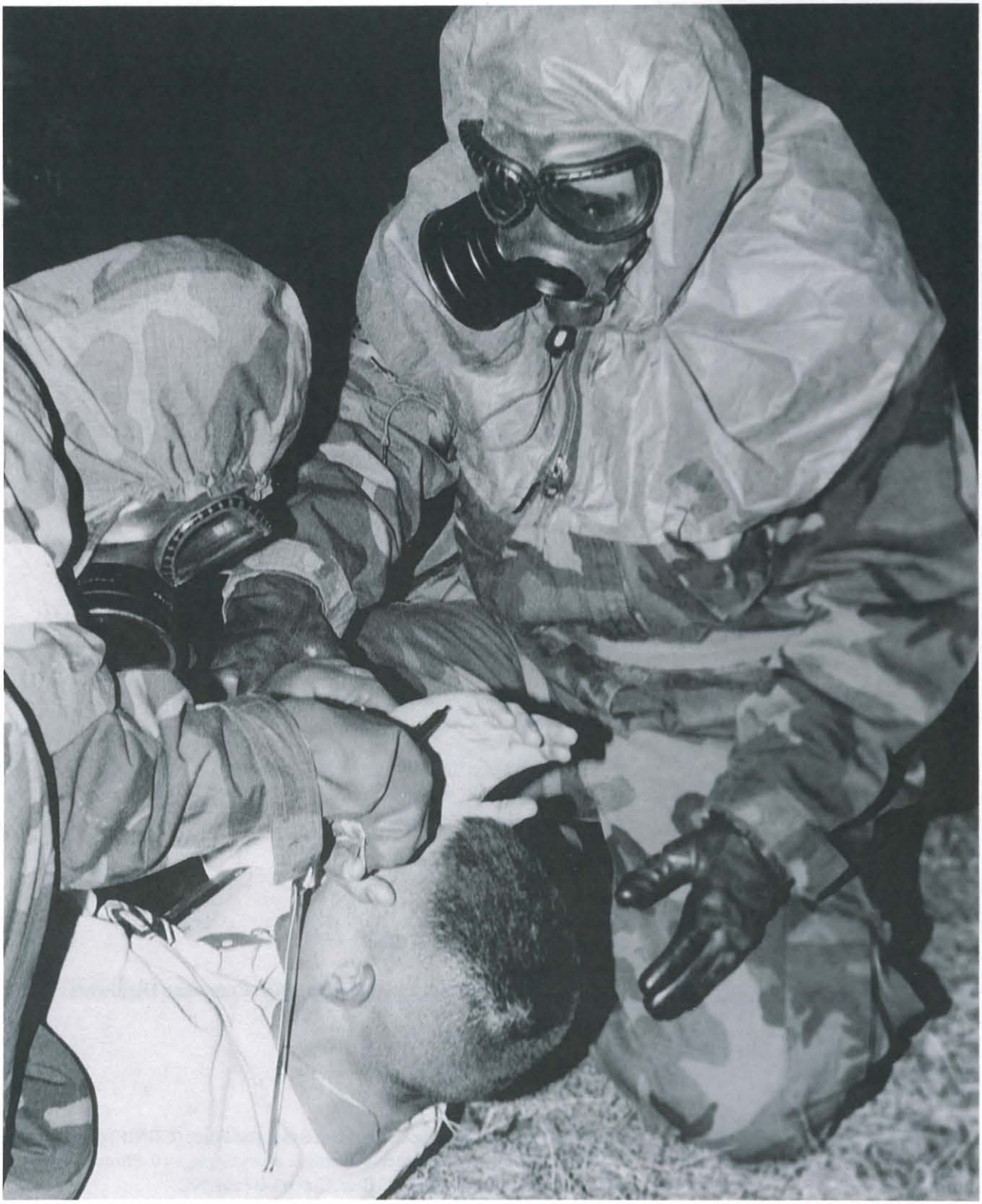

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COVER: Chemical Biological Incident Response Force (CBIRF) personnel treat a simulated casualty during a recent exercise. Story on page 10. Photo by SGT Lance Bacon, USMC, Public Affairs Office, Camp Lejeune, NC.

Orthopaedic Surgeon Takes to the Skies to Deliver Medicine to the Deckplates

CAPT Kenneth Koskella, MC, aka "Doc" to his naval aviator buddies, has taken to the skies above the Mojave Desert in California to deliver medical care to the deckplates, or in "Airdale" lingo to the "flightline" at Naval Air Warfare Center China Lake.*

Dr. Koskella knows from personal experience that some families at China Lake have a need for additional specialty medical care. He identified that need while serving there as a safety officer and operations officer and naval aviator with Air Test and Evaluation Squadron Five (VX-5) from March

*See *U.S. Navy Medicine*, April 1979.

Dr. Koskella preflights and packs gear aboard his airplane.

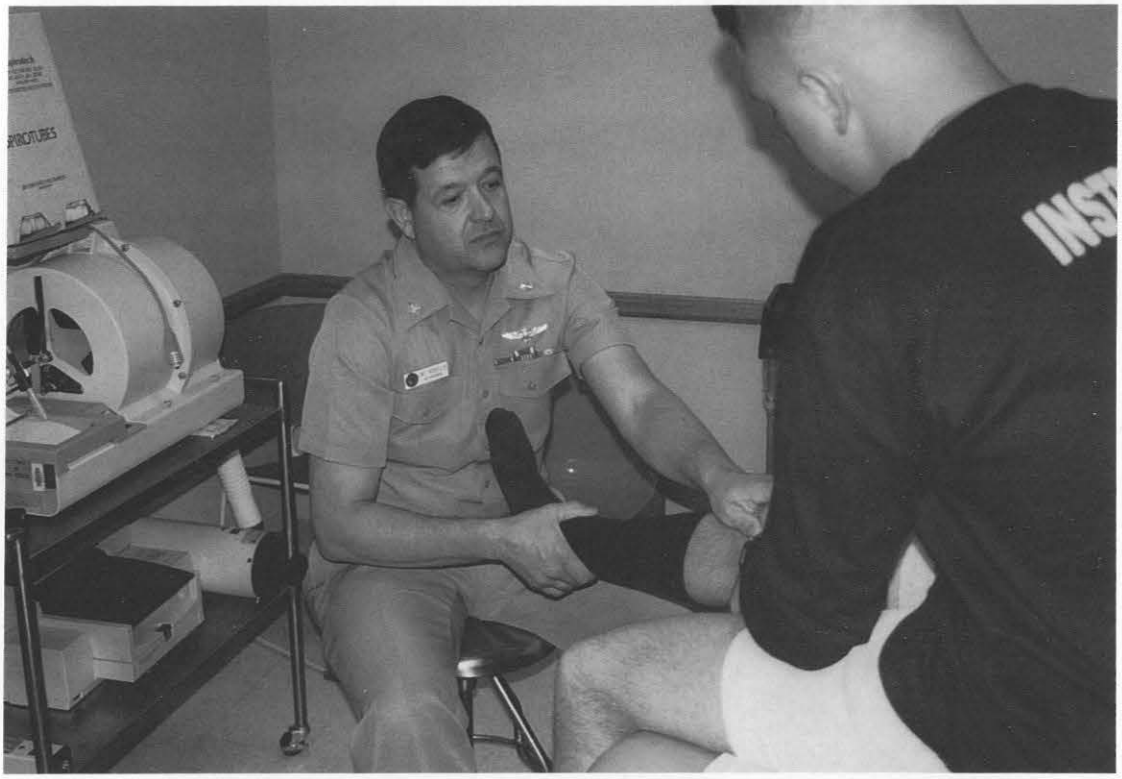
1982 to December 1985. "Young military families at China Lake don't have the TRICARE Prime option available to them. When a patient at China Lake needs specialty care, they either have to see a civilian doctor in the local community of Ridgecrest and pay the cost shares of TRICARE Standard or go through the expense of buying gas to drive all the way to San Diego, CA, for a medical appointment and possibly having to rent a motel room overnight," said Koskella. "Some of these young families just don't make enough money to survive those kinds of expenses," he added.

According to Jeanne Hannon, Provider Relations Manager for Foundation Health, the contractor is continuing the effort in Ridgecrest to recruit providers to the TRICARE network.

Dr. Koskella, a former A-6 *Intruder* pilot and Navy test pilot, and now an orthopaedic surgeon and director of surgical services at Naval Hospital Twentynine Palms, CA, makes monthly trips to China Lake via his homemade experimental aircraft that he started building while stationed at VX-5, and finished while attending the U.S. Navy Test Pilot School at Patuxent River, MD, in 1986. "I started building my plane out of my garage and driveway while living at 1408 Essex Circle at China Lake . . . you can still see the white paint in the driveway where I painted it," he said.

Dr. Koskella's plane, model "Long-EZ," was designed by Burt Rutan who also designed and built the "Voyager" aircraft. A few years ago, Burt Rutan's brother Dick flew the "Voyager" nonstop around the world. One of the actual test engines that was used on the "Voyager" now powers Dr. Koskella's aircraft.

During each of these monthly trips to China Lake Dr. Koskella sees between 20 and 25 patients, saving the commands at China Lake and the taxpayers anywhere from $4,000 to $6,000 per month in travel money. More importantly, his trips provide a great convenience to both patients and the line commands at China Lake. The patients can be seen by appointment and be



Dr. Koskella examines a patient during one of his visits to Naval Air Warfare Center China Lake.

back on the job or at home in the same day. "Because of the inconvenience and expense of specialty medical care at China Lake, some of these patients would rather just live with their pain until they transfer to another command or get out of the military. This could lead to an exacerbation of the problem creating a need for much more extensive medical care than originally needed and, of course, much more expense either for the patient or for the government," Dr. Koskella pointed out.

Region Nine's TRICARE contractor, Foundation Health, has yet been unable to recruit any medical groups or physicians in Ridgecrest to the TRICARE options program. According to the Health Benefits Advisor at the China Lake Branch Medical Clinic, Micki Edge-Obergfell, the local medical groups and physicians do accept the assigned amount of payment from TRICARE Standard; however, the cost shares can become very expensive for junior enlisted personnel. "The young families here get overwhelmed by large medical bills and they panic," Ms. Edge-Obergfell said. "These young families can make arrangements to pay off those bills in affordable monthly installments, or they can seek help from Navy Relief," she added.

Dr. Koskella was successful in recruiting a physician brave enough to fly with him to China Lake periodically, LT Roxanne Macomber, MC, USNR, one of Naval Hospital Twentynine Palms' pediatricians. While Dr. Koskella is holding Orthopaedic Clinic, LT Macomber is seeing pediatric patients in the Well Baby Clinic. According to Dr. Macomber, she doesn't mind flying with Dr. Koskella as long as he keeps the plane straight and level... no loops, dips, or sharp turns.

Dr. Koskella would like to see services from Naval Hospital Twentynine Palms expanded to the patients assigned coverage by Branch Medical Clinic China Lake. "I believe that it's an easy fix for the commands at China Lake to provide active duty patients and their family members with a shuttle bus run down here to Twentynine Palms once a week. I believe we could provide service in orthopaedics, pediatrics, family practice, general surgery, and gynecology," he said.

China Lake's current population, eligible for military medical care or CHAMPUS, is 1,000 active duty, 3,000 active duty family members, and 2,100 military retirees and family members. However, because Naval Hospital Twentynine Palms already serves a large military retiree population within its area of responsibility, the hospital could not accept any more military retirees living outside its 40-mile catchment area.

RADM J.V. Chenevey, Commander, Naval Air Warfare Center Weapons Division, said, "I am an enthusiastic supporter of the efforts by Naval Hospital Twentynine Palms in the efforts to improve the access to medical care for the sailors and marines at China Lake."

LCDR P.E. Connor, officer in charge of Branch Medical Clinic China Lake, would like to see something happen to improve specialty care for beneficiaries at China Lake. "The service Dr. Koskella provides to our patients here was a venture initiated, not because somebody was told to do it, but because a need was recognized by my staff and Dr. Koskella. That need has been met with minimal red-tape resulting in an outstanding outcome, which has not only significantly reduced the cost of medical care, but increased patient access and satisfaction here at China Lake," he said. One young corpsman, HN Rachelle Harvey, summed it up by saying, "By having Dr. Koskella visit patients at China Lake, it prevents the patients from enduring a lot of hassle in trying to get medical care and it prevents a lot of administrative hassle and saves the commands here a lot of money and time."

In addition to the benefits Dr. Koskella delivers to patients in China Lake, the hospital staff here in Twentynine Palms also benefit... they get a firsthand ski conditions report because his flight path has him buzzing around the slopes at Big Bear Lake on his way home. Perhaps because of Dr. Koskella's good work, the commander of the Naval Air Warfare Center will forgive him for leaving behind a white blotchy driveway on Essex Circle. ❑

—Story and photos by Dan Barber, Public Affairs Office, Naval Hospital Twentynine Palms, CA.

Journey to Accreditation

CDR Vianna L. Witcher, NC, USN
CAPT David L. Wheeler, Sr., MSC, USN
LCDR Wendy Lee, MC, USN
LT Jon L. Reagan, Jr., DC, USN
HM1(AW) Joseph E. Galang, USN

The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) is an independent, not for profit organization dedicated to improving the quality of care in an organized health care setting. It was initially founded in 1951 and its members consisted of individuals from the American College of Surgeons, American Dental Association, American Hospital Association, and the American Medical Association. The major function of the organization included developing organizational standards, awarding accreditation decisions, and providing education and consultation to health care organizations.

Accreditation by the Joint Commission is a voluntary process and is highly coveted. It is a prestigious award for medical facilities to obtain because it acknowledges and reflects the delivery of quality health care at these medical treatment facilities. In addition, it means that a hospital automatically fulfills Medicare certification requirements and some insurance plans, so that they can receive either Medicare payments or insurance reimbursements. In some states, accreditation also fulfills requirements for hospital licensures.

Preparing for a Joint Commission Accreditation survey is a monumental task. It has often been described as a difficult and trying process, especially for those individuals who have never been exposed to the accreditation process. This becomes even more problematic if the facility is under Interim Life Safety Measures (ILSM). The survey consists of leadership interviews, on-site clinical visits, and document reviews. The preparatory time frame for such a survey can range from 18 months to 2 years and entails total staff involvement. By transitioning from quality assurance/improvement (QA/I) to performance improvement (PI) and using the tools of total quality leadership (TQL) the preparatory process can be decreased by half and a facility can change a marginal grid score to one with "Accreditation with Commendation."

Historical Background

U. S. Naval Hospital Guam is a 40 plus-year-old 55-bed facility located in the Marianas Islands and is the only U.S. military hospital in the Western Pacific Ocean outside of Japan (which is over 1600 miles away), and is nearly 5400 miles from the west coast of the United States. It has the capability of expanding its bed capacity to 382 beds should a conflict or disaster occur. Its patient population consists of 10,000 active duty members, their dependents, and retirees. On an emergent basis the hospital provides services to the civilian population of Guam of approximately 140,000.

Over the course of a 6-year period, Naval Hospital Guam had two Joint Commission surveys. The command obtained final grid scores of 84 and 79, respectively, with three to six Type I recommendations, and was placed under ILSM. The facility encountered multiple structural problems as a result of a typhoon and earthquake occurring in the same year. These two disasters were contributing factors to the facility's low JCAHO grid score in 1992. The hospital suffered a tremendous amount of structural

damage. All repair had to be completed prior to its next survey process, which was to occur in the winter of 1995.

In the fall of 1994, U. S. Naval Hospital Guam actively began its journey toward their 1995 Joint Commission survey process. The command was using the tools and concepts of QA/I vice PI, and communication was fragmented across the continuum because of the abundance of councils, committees, and boards within the command. In view of all these facts and after reviewing the previous JCAHO grid scores and ILSM discrepancies, the executive officer realized that in order for the hospital to successfully pass their 1995 accreditation process, drastic changes would need to take place.

The executive officer had a history of having JCAHO grid scores of 98 percent and 100 percent, respectively. Taking this into consideration, the command used his "road map" to begin our journey. A "game plan" was formulated and a slogan developed to get the command ready for this monumental task. The slogan became "95 in 95."

Performance Improvement (PI)

PI, much different than QA/I, consists of looking at a set of processes and systems rather than looking at individuals. It involves looking at the whole picture and involving the process owners vice dealing with just the effects and making "quick fixes" to resolve issues and/or problems.

PI looks at process, systems, and outcomes. By using this process in conjunction with the tools of TQL, such as FOCUS-PDCA, data collection goes from a cumbersome, ineffective process to a system whereby the data collected can help you identify negative trends, problem areas, and give your organization a clear picture of how to improve your PI activities.

Pre-Survey Preparation

Over the past few years the Joint Commission has made several changes on how they view an organization and subsequently these changes are reflected in their accreditation manual. The standards are more integrative and "cross walk" into the various functions. When the survey evaluates an organization they are looking for collaboration among the various disciplines and departments within the organization. The philosophy of dividing the manual into disciplines and/or departments to help prepare for an accreditation survey is now obsolete. Subsequently, when you begin this journey, it is important that you realize this will be an "all hands" evolution. In order to have a successful survey, your facility must come together as one unit and function as a team, regardless of rank, rate, or status.

Fourteen to 16 Months Prior to Survey

At least 14 to 16 months prior to the survey, you need to formulate a multidisciplinary task force. The composition and size will depend on the facility. The team should consist of representatives from every discipline within the command. During the early stages of the process the team will experience confusion, uncertainties, and frustrations. They will be clueless as to what direction to take, let alone how to stimulate command involvement. To further complicate matters, the majority of your members may have a limited knowledge base of the accreditation process, the Joint Commission standards, or the concept of PI.

Initially, monthly meetings should occur for at least the first 3 months. During this time the members need to review the previous JCAHO accreditation decision reports, Type I recommendations, discuss any potential problems that may exist, receive training on the current 800 Joint Commission standards and the survey process, and, most important, implement a timeline. By doing so, they will begin to gain a heightened awareness of the survey process and, more importantly, begin to communicate with each other and work as a team.

After being together for 3 months as a team, the chairman of the task force should divide the group into teams. Each team should have a team leader and be grouped according to the Joint Commission functions (recommend that you have no more than eight teams). There should also be one team solely assigned for tracking and documentation of your progress.

Each team captain is responsible for ensuring that their team is familiar with the JCAHO functions and their intent. He/she should ensure that his/her team obtain all the pertinent documents for their function to help prepare for the document review. Also, on a monthly basis each respective team captain should submit a report to the tracking and documentation team of their progress. The team captain of the tracking and documentation team on a periodic basis should brief the executive staff on the task force's progress and inform them of any problems and/or issues that may require their support or intervention. It is strongly recommended that the teams meet either weekly or biweekly for the first 8 months prior to the survey and more frequently as time draws near the actual survey. By meeting frequently, this will provide a forum for each member to share information, brainstorm, discuss any "lessons learned," and develop group cohesiveness.

The chairman of the task force and/or a member of the executive staff should meet with team captains bimonthly and the entire team monthly to render guidance or discuss

any open issues or problem areas. It is also helpful if the chairman arranges for either consultants (members of the Health Support Office or a JCAHO consultant) or other PI coordinators to come in and talk with the entire task force to render in-service training on the accreditation process.

Training

An essential ingredient that must be done to help steer your facility in the right path is training. This needs to be started very early in your preparatory phase. Every member within the facility regardless of their job scope, status, or title needs to be trained. This will be a trying and difficult phase for your task force because new concepts will be introduced and people will be resistant to change. Nonetheless, you must pursue, because this will be the "turning point" in your journey. Department-specific training can take anywhere from 10 to 12 months, or longer depending on the size of your facility and task force.

The training should be department-specific and interactive to help individuals gain insight to how they play a key role in this process. It should include the concept of PI, data aggregation, the JCAHO standards and their intents, and the tools of TQL. An effective way to educate and motivate your staff is to become creative. You can use vignettes, the "jeopardy approach," or have guest speakers from other commands that have recently gone through a survey. At the end of each training session, a brief description on storyboards and their importance should be included. The key to this whole process is help the staff gain a heightened awareness of what the process entails, how they can comply with the standards and dispel the myth that preparing for this type of survey is a "paper work" drill.

As training continues, you will find that your staff will begin to work together as a team, dissemination of information will improve immensely, and storyboards will appear within your facility. In addition, once the medical community gains a heightened awareness of PI and TQL, critical pathways will develop and they will even refocus how they monitor, evaluate, and assess the various PI indicators and activities.

These interactive training sessions can take anywhere from 1 1/2 hours to 2 hours. It is essential that when your staff perform these training sessions to do them with a team approach. The instructors should be of different disciplines because this will help encourage learning and give different perspectives regarding the standards (i.e., nurse and a physician and/or administrator and a hospital corpsman, etc.). This is a cumbersome and time-consuming process, and your task force members that will be conducting this training may experience fatigue and irritability at this point. Encourage them to take some time out for themselves to relax!

TQL Training

"Just in time" TQL training is the "icing on the cake" that will help your facility to transition from QA/I to PI. By training your staff on the concept and tools of TQL, it will help them gain a heightened understanding not only of how to aggregate data, but how to make it work to improve processes within the organization. More important, once the medical staff (which is usually the toughest group that you will have to teach because of scheduling, etc.) grasp this concept, don't be surprised when they begin to refocus how they assess, evaluate, and monitor their critical indicators. The staff will realize that by implementing the tools of TQL it can help them design different processes, start critical pathways, enhance patient care and outcomes, and effectively use their resources. This training may take your task force in excess of a year to complete, and all of your personnel should receive this training. If at all possible, during your preparatory phase it is important that you also initiate leadership and team-building training, such as Principle Centered Leadership, Seven Habits of Highly Effective People, and/or Strategic Planning. This training will help your middle managers and senior leaders not only obtain a different perspective on the PI processes that they have in place, but enhance their problem-solving techniques.

Tracking and Documentation

Maintaining documentation of your progress is of the utmost importance. The tracking and documentation is your milestone in compiling all of the required documents for the two document interview sessions you will have. This process should not be delayed until the last minute! You need at least a year to compile all the information that you will need for both of the document interview sessions.

Immediately, the tracking and documentation team needs to implement a journal of every aspect of your journey. This document will contain any "lessons learned," correction of discrepancies, planning preparations, etc. The team also needs to work closely with the PI coordinator to ensure that each required committee has at least 1 year's worth of minutes (this needs to be present in the document review session). If any minutes are missing the committee chairman will have time to produce the missing documents. Also, the team will start reviewing the required command

instructions noting if any are missing or outdated. If so, then they will contact the process owner so that these instructions can be either updated or obtained.

We recommend that you organize your documents in accordance with the Joint Commission functions and place them all in the same colored binders. The required seven management plans should be placed together in a separate binder. Any and all other documents that will not go into the "functions binder" should be strategically placed near the binders in alphabetical order.

The document and tracking team is probably your most critical group. They should be assigned to prepare for the document review session and be present during the actual survey. In addition, they should also be responsible for ensuring that the exit brief is taped (recommend that you have two tape recorders during this session). By maintaining accurate documentation and tracking after the survey, it can help you file a successful reclama should you receive a Type I recommendation in your final report or help your command obtain either unit or individual awards for deserving personnel.

Competency Assessment

The establishment and delineation of competency is a vital part of the accreditation process. It is in your best interest that everyone within your facility have a training file. Having these files in the same format will ensure that all the required training is present and will facilitate a successful competency assessment interview session. Your staff should have had training and/or the following information present in their files:

- Evidence of a current position description
- Evidence of command and departmental orientation
- Fire and safety training (including initial training to their department)
- Infection control training
- Interim life safety training
- Seclusion and restraint training (clinical personnel)
- Age-specific training (clinical personnel)
- Hazardous waste/material training
- Privacy Act statement present in the front of each training file
- Annual review of competency statement
- Proof of training in the individual's specialty (i.e., infection control)
- Current certifications (ACLS, PALS, BLS, etc.) Medical, nursing, and some of the credentialed ancillary staff have this documentation in their credential's files and there does not need to be a duplicate copy in their training files.
- Ongoing departmental training
- Equipment management (particularly of the equipment that is located within your workspace)
- Information management (CHCS, MIS, etc.)

If your training files are decentralized and in different formats, this portion of your preparatory process will be tedious, time consuming, and oftentimes frustrating. This process can take up to 10 months or longer to complete, so it behooves you to start early. The team that you assign to do this task should also be the ones assigned to assist the surveyors during the competency assessment process. This is the area where your task force may encounter the most resistance. It is important that the executive leadership be extremely supportive when you attempt to accomplish this venture.

Interim Life Safety Measures (ILSM)

If your organization is currently under ILSM or there are major safety, environmental, or constructural problems that exist, you must implement corrective action immediately. The head of facilities with the support and help of your senior executive leadership, safety manager, and PI coordinator need to design and implement a plan for improvement. This has to be an "All Hands" effort to be effective.

The safety manager and the head of facilities should critically evaluate every area within the organization to identify areas that need to be corrected. They should also begin to prepare the statement of condition (SOC). At the same time, ILSM training for every single staff member should commence within your organization. To alleviate excess time being spent out of the clinical area for training, this training can be done in conjunction with PI and TQL training.

The SOC is a complicated and difficult document to prepare. If your head of the facilities department has never tackled this type of document, it would behoove you to obtain external assistance. You can get help to prepare this document from either your local health support office, or hire a Joint Commission consultant (this can be an expensive venture, but extremely valuable).

Three to 6 Months Medical Record Review Process

A multidisciplinary team needs to be formulated for this important interview process. We suggest that you have the following composition:

- Nursing representative (both inpatient and outpatient)

• Medical staff representative (both medical and surgical)
• Social work/mental health representative
• Patient administration representative
• Chairman of the medical records committee

If your medical records committee is a multidisciplinary team and consist of most of these disciplines, then we strongly recommend that they be the ones to do this interview process.

It is extremely important that you begin this process at least 6 months prior to the actual survey. The team should meet at least biweekly the first 3 to 6 months and weekly thereafter. Each team member should review 10 records each time they meet. In order to obtain 100 percent compliance during the actual survey process, we strongly suggest that you use the JCAHO open medical records review form. This checklist is provided in the book, *"The Complete Guide to the Survey Process,"* which can be ordered from the Joint Commission.

The first time your team begins to practice for this process they will probably be slow, frustrated, confused, and will find many discrepancies. One of the primary reasons for this is that the group is unfamiliar with some of the forms and/or where the required documentation is found in the medical record. After practicing with this form for about 2 months, they will begin to come together as a unit. By the time the actual survey occurs they will be able to breeze through the records and avoid any Type I recommendations.

"Pocket Guides"

It is difficult for your staff to remember all of the many details, policies, and procedures that they may be required to verbalize with the surveyors during the actual accreditation process. A significant tool that can be designed particularly for your organization is a "pocket guide." The pocket guide should contain your facility's mission and vision statement, list of translators within the command, ILSM (if applicable), safety issues, etc. This is a tool that can be used at any time for your staff because it orients them to your organization and is a great avenue to use for the dissemination of information.

Mock Surveys

An essential process that must be done 6 months, 3 months, and approximately 1 month prior to the survey is weekly mock surveys. They need to be conducted in every department and for every interactive interview group (continuum of care, leadership, CEO/Strategic Planning, etc.) both internally and externally. Each group should do a self-assessment and/or role play their interview session. Also, have the task force and/or an external consultant come in and conduct a mock survey. We highly recommend that your facility obtain from Joint Commission, *"The Complete Guide to the Survey Process."* This is an excellent reference book that contains frequently asked questions and describes what each interview session entails and the documents that the surveyors will need. Remember: *practice makes perfect!*

If your facility decides to bring in external consultants, such as Health Support Office or consultants from the Joint Commission, this should be done within this time frame. By doing so, it will give the organization time to correct any and all discrepancies that may be found during the mock surveys. Your external consultants can help prepare you for the various interview sessions that you will encounter during the survey process and how to prepare.

One to 3 Months Prior

The PI coordinator needs to compile which areas will be surveyed; organize interview teams, itineraries, location of interview sessions; and begin communicating with his/her liaison person at the Joint Commission. Liaison activities with the Joint Commission is essential. During this time the PI coordinator facilitates the filing of the application, negotiates the dates of the survey, and works out details for the final survey. This planning phase should begin at least 3 months prior to the survey and not left for the last minute. There are a lot of minute details that need to be taken care of which may be overlooked if delayed until the last minute.

The coordinator needs to formulate teams and team leaders for the following:

• **Opening Conference:** He/she should consult with the executive staff regarding who will present this most critical process. The executive leadership should be briefed on what the interview process consists of and inquire and/or make suggestions and/or recommendations on who should be present.

The importance of this interview session cannot be overemphasized. This is the first real contact with the surveyors and helps establish the tone of the survey (establishing the use of first names, resolving schedule changes, verifying the certificate of survey, validating the public disclosure and any requests of the public to visit the interview team). The opening conference helps orientate the surveyors to your facility and begins setting the stage for an informal exchange of information prior to moving into

the PI overview presentation. Remember: *you never get a second chance to make a first impression, so do it right the first time.*

• **PI Overview Session:** This is when the leadership briefly describes to the survey team the organization's philosophy on PI and how they progressed from QA/I to PI and the extent of command involvement in this process. This session sets the stage for the surveyors to validate the PI process throughout the survey via the function interviews and patient care site visits.

• **Site Visits—Functional and Patient Care Settings:** Multidisciplinary teams are the "hallmark" of these interview sessions. The PI coordinator should ensure that each individual involved in these sessions are aware of what his/her role will be in the survey process. For example, the maternity unit should be composed of the following: (a) nursing and medical staff representatives from the maternity unit, nursery, and OB/GYN clinic, (b) discharge planner, and (c) a representative from a bereavement group (if there's one available at your organization). The keys to success during these interview sessions are preparation, rehearsals, enthusiasm, and leadership support.

• **Leadership Interview and Exit Brief:** The executive leadership, PI coordinator, and physician advisor should be present for these interview sessions. Prior to the actual survey, it is important that this group "role play" these interview sessions.

• **Building Tour:** The PI coordinator needs to collaborate with the head of facilities to ensure that he/she has developed a building tour schedule and who will be accompanying him/her on the tour. This tour can take anywhere from 2 to 3 hours.

• **PI Team Interview:** At least three presentations should be prepared for this interview (usually only two are presented). The PI coordinator should evaluate what PI activities have occurred within the command and select the ones that have made the biggest impact.

• **Escorts and Administrative Assistants:** Each surveyor that is assigned to your facility should have an escort and administrative assistant. The escort and his/her administrative assistant is responsible for ensuring that the surveyors attend their interview sessions in a timely fashion, and have the required information that he/she may need during the survey. Also, he/she coordinates any schedule changes, assists in resolving any issues, and/or makes on-the-spot corrections to any noted deficiencies. The administrative assistants record the questions, schedule changes, any noted deficiencies or problems, and call ahead to alert the next site of the teams impending arrival (if they are tardy or early or need anything).

One Month Prior

Approximately 1 month prior to the survey biographical information on the survey team will arrive to your facility. Once you receive this information, the PI coordinator should ensure that the surveyors receive a welcome aboard package. This package should include maps of the area, tour accommodations, information about the area and your facility. Also include in this package any additional information regarding their itinerary, parking, etc. In addition, disseminate a copy of their biographical information to the executive leadership.

During this time departments and interview teams should do a final self-assessment and/or peer review to check for any last minute corrections or resolve any issues or problems that may have evolved. A state of anxiety and panic may be present during this time, remind your staff to relax!

Summary

Organization, planning, and teamwork is the key to success in every facet of the preparatory phase. The staff at U. S. Naval Hospital Guam realized this early in their preparatory process. The intent of the command was to market our organization both internally and externally as the "finest healthcare facility in the Western Pacific."

This strategy began with our using the executive officer's guide to accreditation as a "road map" developing a slogan and coming together as a team. We hope that the recommendations and suggestions we gave you regarding our journey can help you have a successful accreditation process.

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CDR Witcher is Navy Fellow, JCAHO/DIVPMR. CAPT Wheeler is Commanding Officer of U.S. Naval Hospital Guam. LCDR Lee is Performance Improvement Physician Advisor and HM1 Galang is Total Quality Leadership Coordinator at the same facility. LT Reagan is Deputy Performance Improvement Physician Advisor at the Naval Dental Clinic, Yorktown, VA.

Chemical Biological Incident Response Force

CDR Trueman W. Sharp, MC, USN
CAPT Laurie Balagurchik, MC, USN

"The United States shall give the highest priority to developing capabilities to manage the consequences of nuclear, biological or chemical materials or weapons use by terrorists."

President Bill Clinton
Presidential Decision Directive 39, 21 June 1995

"There is a need for an organization—manned, trained and equipped to counter the growing biological/chemical terrorist threat. The Marine Corps will have such an organization . . . manned with properly skilled and trained personnel . . . equipped with state-of-the-art detection, monitoring and decontamination equipment, suited for operations in a wide range of contingencies."

GEN Charles C. Krulak
Commandant of the Marine Corps
Commandant's Planning Guidance, 1 July 1995

After bombings of the Federal Building in Oklahoma City, the World Trade Center in New York, and U.S. military facilities in Dharan, Saudi Arabia, the threat of terrorism against Americans is now a highly visible reality. While using a conventional explosive device may continue to be the predominant means for conducting a terrorist attack, terrorists now have other options. Access to the technology needed to develop and use chemical or biological weapons is much greater today than ever before. The threat of using these weapons of mass destruction for terrorist purposes was recently realized in the Sarin attack on the Tokyo subway system, which may turn out to be a watershed event that forever changes terrorism. Other less publicized incidents have also occurred involving chemical or biological agents, such as the biologic toxin ricin. These

Photos by SGT Lance Bacon, USMC

A *security element* member provides cover while a corpsman masks a "victim" of a chemical terrorist attack.

ominous developments led President Clinton to declare recently that coping with new forms of terrorism must be a national priority. In response to the evolving threat of terrorism, the Marine Corps developed the Chemical Biological Incident Response Force (CBIRF). This innovative new unit provides intriguing and challenging new roles for Navy medicine.

Concept and Development

In the summer of 1995, GEN Charles C. Krulak, the Commandant of the Marine Corps, tasked his new Warfighting Laboratory in Quantico, VA, to consider the idea of a special force whose primary mission would be to respond to a terrorist incident involving chemical or biological weapons. The Warfighting Lab had just been established in July 1995, "to serve as the cradle and test bed for the development of enhanced operational concepts, tactics, techniques, procedures and doctrine which will be progressively introduced into the Fleet Marine Force." The Lab staff felt that although there were already assets in the military services that could address specific aspects of this mission, a new Marine Corps force would be unique and valuable because it would include all the principal elements needed in an incident response in a single integrated package.

In the fall of 1995, the Marine Corps Combat Development Command (MCCDC), Quantico, VA, conducted a more detailed examination of the concept through the combat development process. This process ensures that new initiatives will not only make sense for the Marine Corps but also that they will be supportable. The process included an analysis of the impact of the new unit on Marine Corps doctrine, organization, training, education, and support. The name Chemical Biological Incident Response Force (CBIRF) was coined, and the concept was ultimately approved in May 1996.

The time required to actually field a new unit would normally be at least a year, and perhaps longer. However, with an increasing interest in chemical and biological terrorism, and with the upcoming Olympic Games in Atlanta as a catalyst, an interim CBIRF was established at Camp Lejeune, NC, in April, just 8 months after the initial idea was first proposed.

The interim CBIRF was established within Marine Corps Forces, Atlantic (MARFORLANT). Personnel and materiel were drawn from operational units and Naval Hospitals Camp Lejeune and Cherry Point, NC. Soon after its formation, the CBIRF conducted field exercises in June and July 1996 to simulate, respectively, a deployment to an austere location overseas and an urban environment in the United States. In July the CBIRF had its first mission when it deployed to Atlanta, GA, to provide contingency support for the Olympic Games.

Roles and Missions

The principal mission of the CBIRF is to provide rapid assistance after a chemical and/or biological terrorist incident. The unit does not become involved in resolving a hostile situation or in law enforcement operations, which are considered "crisis management." Rather, the CBIRF is designed to cope with the aftermath of an attack, such as taking care of casualties, which is considered "consequence management." The CBIRF is not de-

Chemical Biological Incident Response Force

Organization

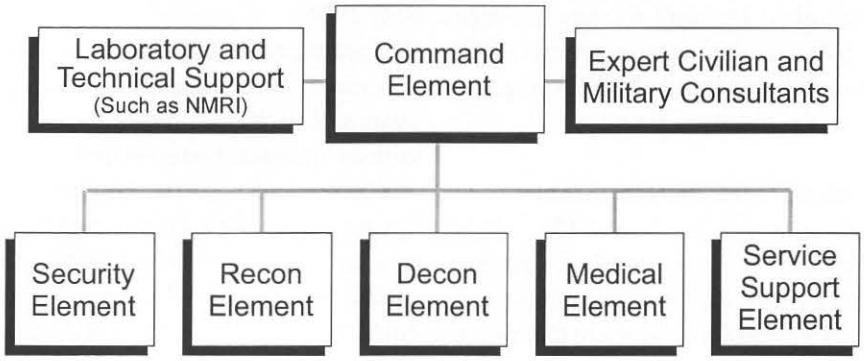

Figure 1

ployed to assume control of an incident response but to provide needed support to the on-scene commander, whether this is an ambassador overseas, a base commander, or another authority. The CBIRF can deploy from home within just a few hours, or, as in the case of the Olympics, be prepositioned in high-threat situations. Like most of the Marine Corps, the unit can quickly task-organize; the entire force does not necessarily need to deploy. The unit is not intended to conduct prolonged operations or provide in-depth services, and relies upon certain outside support and augmentation, such as transportation and resupply, particularly if the unit travels long distances and is engaged for more than a few days. While in garrison, CBIRF personnel serve as expert trainers and consultants in chemical/biological matters throughout the Navy and Marine Corps.

Mission of the Medical Element of the Chemical Biological Incident Response Force

- Provide triage, emergency treatment, and evacuation for incident victims, and hold casualties for short duration of time
- Advise and assist local medical authorities
- Conduct an initial epidemiologic investigation
- Provide organic medical support

Figure 2

Organization

The CBIRF is currently located at Camp Lejeune and consists of approximately 380 marines and sailors in six elements (Figure 1). Although each element has a different function, they are closely integrated.

The mission of the *reconnaissance (recon) element* is to rapidly detect, classify, and identify chemical or biological agents, and collect samples for additional analysis. This element also defines the hazard area, or the "hot zone."

To identify the classic military chemical agents, the element utilizes standard gear such as Chemical Agent Monitors (CAM) and M21 Remote Sensing Chemical Agent Automatic Alarms (RSCAAL). The unit also has an XM-93 Fox vehicle, which contains highly sophisticated detection equipment, such as a mass spectrometer, in a high speed, high mobility armored vehicle. To identify industrial chemicals, the CBIRF uses a number of commercial devices, such as Draeger tube systems. For biological agents, the CBIRF relies principally upon rapid diagnostic techniques developed and fielded by a team from the Naval Medical Research Institute, Bethesda, MD. A number of sophisticated computer programs are used to rapidly model and predict the dispersal pattern of the agent in question.

The *decontamination (decon) element* is responsible for decontaminating casualties, personnel, and essential equipment. This element operates at the outside edge of a contaminated zone. The decon element uses standard military decontamination procedures that have been modified to be able to establish decontamination lines faster and move casualties through more quickly. For example, decon teams utilize a system of roller slides to rapidly move litter patients through the procedure.

The *decontamination element* processes contaminated casualties through their decontamination site. There the victim's clothing and personal items will be removed, and he/she will be sprayed and sponged with a 0.5 percent bleach solution.

The *security element* has had training in security patrols, military operations in urban terrain, riot control, and search and seizure techniques, as well as special training in chemical and biological environment operations. This element can deploy with a variety of nonlethal and lethal weapons, or without weapons, depending on the situation. Cross-trained security marines assist with recon, decon, or other necessary functions.

The *service support element* provides transportation services with 5-ton trucks, logistic vehicle systems, and Humvees while the engineering section provides basic utilities such as potable water with Reverse Osmosis Water Purification Units (ROWPU) and electricity with field generators. The embarkation section of the element manages deployment and redeployment, and the supply section provides basic supply and warehousing support.

The *command and control element* is the CBIRF's central nervous system. This element plans and coordinates CBIRF operations through its intelligence, administration, and communications sections.

A particularly high premium is placed on communications. Internally, it is imperative that the CBIRF elements are working closely in concert, and in the confusion after an incident the incident response commander and the CBIRF must be able to communicate and integrate effectively with a myriad of other commands and response organizations. The element utilizes a number of standard military and commercial systems, including radios, walkie-talkies, cellular telephones, and video teleconferencing equipment.

The *medical element* currently includes 3 physicians, a physician's assistant, an environmental health officer, a plans and medical intelligence officer, a nurse, and 25 corpsmen. The four missions of the medical element are shown in Figure 2. The medical element is specially trained and equipped to manage chemical and biological casualties, and utilizes state-of-the-art diagnostic and treatment modalities. The medical staff continues to develop new concepts of operation for dealing with casualties in the unique environments they could face. For example, as a result of the Olympics in Atlanta, the CBIRF developed a new plan for dealing with an incident site in a domestic setting where there is likely to be extensive medical backup (Figure 3). This concept of medical care in the "hot zone" is quite different from standard military battlefield doctrine.

This element also provides organic medical support to the CBIRF, which not only involves dealing with the basic medical problems inherent in a unit of 350 personnel, but also with a number of unique occupational and preventive medicine issues. The medical element is prepared to provide expert consultation and assistance to other health care providers and to deal with a number of public health issues that could arise.

The medical element works very closely with the other elements. For example, CBIRF medical personnel are closely involved in preventing and managing heat casualties, which requires an integrated line-medical approach. Medical element personnel

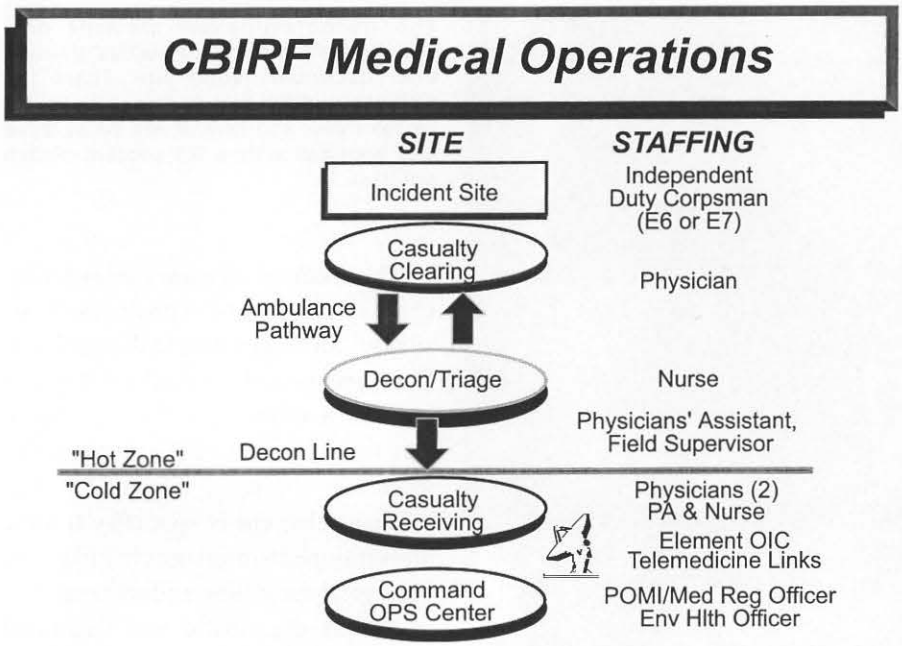

Figure 3. Concept of Medical Operations After a Terrorist Incident Involving a Chemical Agent

also work closely with the decon and recon elements. Other elements support the medical element by providing litter-bearing and other essential services.

External Relations and Support

The CBIRF cannot operate effectively in isolation. A very unique feature of the unit is the *Reachback Advisory Group.* This group consists of nine highly distinguished civilian physicians and scientists linked to the CBIRF through a sophisticated computer and communications hub in Quantico, VA. The group can function as a "virtual" staff of experts to obtain real-time consultation via telephone, e-mail, an internet home page, or an internet "whiteboard."

The CBIRF also works extensively with many other agencies. For example, the medical element works closely with the Medical Advanced Technology Management Organization (MATMO), Ft. Detrick, MD, to deploy cutting edge telemedicine and information management equipment, such as the mobile medical mentoring vehicle (M3V). This vehicle enables real-time audio and visual communications with corpsmen in the hot zone, and provides a video-teleconferencing link via satellite to any location in the world. The CBIRF also works with the U.S. Army Medical Research Institute for Infectious Diseases (USAMRIID), the U.S. Army Research Institute for Chemical Defense, the Centers for Disease Control (CDC), the Federal Bureau of Investigation (FBI), and the Environmental Protection Agency (EPA).

Atlanta Olympics

In July 1996 the CBIRF was deployed to Atlanta for the Olympic Games. If a chemical or biological incident had occurred, the CBIRF had the responsibility for going into the contaminated area and "turning victims into patients." While there was a plethora of medical support in Atlanta for the Olympics, the CBIRF was the only unit with the capability to triage, treat, and extract victims in a hot zone. While in Atlanta, about a third of the force, principally personnel from the recon, decon, and medical elements, were located within the Olympic Ring very close to Centennial Park and the Olympic venues. The rest of the unit was readily accessible a few miles away at Ft. Gillem.

The deployment proved to be an invaluable learning experience. The CBIRF had the chance to participate in extensive planning and interagency exercising for a chemical or biological incident response. This was the first time many of the units had ever worked together. As a result, the CBIRF learned about the capabilities of the Army Technical Escort unit, Public Health Service, FBI, CDC, EPA, and many other organizations. No number of exercises could possibly duplicate the many lessons learned from this experience. The terrorist bombing that occurred in Centennial Park fortunately did not involve chemical or biological agents. However, this event also proved to be a highly informative experience by serving to test the response system. The CBIRF, which was less than a mile away from the bomb site, was alerted within minutes of the blast and was mobilized to move into the site.

Current Issues

No organization, civilian or military, has ever been formed to carry out such a mission before. As the interim CBIRF transitions to a permanent unit, it continues to evolve rapidly. As the medical element embarks on new frontiers in the practice of medicine, new medical policies, procedures, training, equipment, and supplies are required to provide medical services in the aftermath of a chemical or biological terrorist attack.

One of the most difficult problems facing the CBIRF has been rapid identification of agents. While most be-

A *reconnaissance element* Marine checks for the presence of chemical agents.

lieve that the standard military chemical agents will be readily identifiable, quickly characterizing one of the thousands of commercial chemical compounds a terrorist might use could be extremely difficult. The CBIRF has been working closely with the EPA, Coast Guard, and other agencies to obtain state-of-the-art detection equipment and agent identification protocols for industrial chemicals. Impressive new technologies are increasingly available to identify biologic agents. However, rapid characterization of these agents remains a difficult challenge.

Providing patient care in a chemical or biological environment creates many problems. For example, administering advanced trauma life support to a contaminated victim while the medical providers, and possibly the victims, are using protective gear is difficult. The CBIRF is developing new doctrine and serving as a test bed for innovative medical equipment and techniques. For example, the CBIRF medical staff utilizes small portable ventilators to help provide effective pulmonary support at critical triage and stabilization points.

The CBIRF medical element is designed to provide emergency care for a limited number of casualties. If there are large numbers of victims, or if medical care must be provided beyond the stabilization phase, the medical element will need assistance. Navy medicine is in the process of identifying ways in which it can best augment the CBIRF with additional personnel, specialists, equipment, and medevac assets in a contingency situation.

The health threats that CBIRF staff could face has required development of new policies and procedures. For example, for situations in which the agent is unknown or is a commercial chemical, CBIRF personnel use personal protective gear and respirators, such as Level A suits, that provide more protection than the standard military Saratoga suits and M-40 protective masks. The CBIRF is continuing to refine protocols that assure personnel are adequately protected when they enter an area contaminated by an unknown agent. The problem of heat stress lead the CBIRF staff to identify, test, and employ recently developed cooling vests for use under protective clothing. CBIRF personnel participate in special immunization programs so that they are protected against biological threats.

While it is impossible to predict what a chemical or biological incident will look like, such an event will certainly present many medical challenges—and probably many unforeseen ones. For the medical personnel with this new unit, and for Navy medicine overall, the CBIRF presents an opportunity that is on the cutting edge of medicine. ❑

Dr. Sharp is Preventive Medicine Officer, Headquarters, U.S. Marine Corps, Washington, DC. Dr. Balagurchik is Senior Medical Officer, Chemical Biological Incident Response Force, U.S. Marine Corps Forces, Atlantic, Camp Lejeune, NC.

Two British Surgical Advances From the Gulf War

MAJ John D.C. Bennett, MC, FRCS, RAMC
Stephen M. Milner, M.D.
Guilio Gherardini, M.D.

During war everything becomes important very quickly. Money is made available, and demands have to be met urgently. The world's press with its photographers are eager to record everything and transmit it to the people and politicians at home. Medical matters are newsworthy because they are easily understood and there are plenty of experts at home ready to give an opinion on whether things are being done correctly. This is in contrast to such matters as ammunition and communications, etc. Also, battle casualties are emotive—and bad for politicians.

The threat that chemical weapons might be used makes it important that adequate protection be available. For the individual, this means an efficient respirator and chemical protection suit (MOPP 4). But bullet and shrapnel injuries may coexist with chemical injury. To allow continuous surgical procedures with care providers not in MOPP 4, the antichemical warfare tent offers a positive pressure environment. This is important when confronted with chemicals such as mustard agent which require decontamination and where spread can occur from patient to provider.(*1*)

In the Gulf War something also had to be done about the large number of burn casualties which were expected. A military field hospital might receive such patients in numbers which would overwhelm a civilian university hospital. A method was therefore needed whereby a simple safe fluid resuscitation regimen could be administered by nonspecialist personnel; the *Burn Wheel* provided the necessary guidance. These advances have all seen subsequent civilian applications in addition to their original military purposes.

Surgery in a Chemically-Protected Environment

A pressurized air system is used to maintain a safe internal environment against chemical weapons as well as biological agents once a patient is considered noninfectious. Access is via air locks, and all seals are air tight (and hence "chemical tight"). As a result, surgeons can operate freely without the encumbrance of suits, respirators, and helmets.(*2*)

Each butyl-lined tent (*Porton Liner, Defense Nuclear, Biological and Chemical Center*) measures about 7.3m by 5.5m, so conditions are somewhat cramped. A surgeon likened it to working inside a rubber wet suit blown up to the dimensions of the back of a pickup truck. It is not possible to transport conventional wheeled patient carts

through the air locks, so patients are carried on stretchers which are then laid on the operating table. The airtight seals also cause a reduced air flow and increased temperature and humidity. Temperatures of 32 degrees C were recorded, making the use of volatile anesthetic gases hazardous. Lighting was provided by portable lamps as the tent lining is not translucent. These tend to cast shadows, a problem helped by attaching spotlights to intravenous poles. Thus, although safe, it cannot be said that operating in such conditions is simple.

It was not long before a series of operations had been performed under antichemical warfare conditions.(*3*) In the 3 months before hostilities began in January 1991, 110 operations were performed in the collective protection at 33 Field Hospital, Royal Army Medical Corps at Al Jubayl, Saudi Arabia. It was possible to perform 14 of these under local anesthesia with the remaining 96 being performed under full general endotracheal anesthesia. One naturally hopes that this will never be needed but the risk of accidents at chemical works and other civilian disasters means that it is important that the facility and expertise be available. The chemical tent can also be used in a manner like reverse isolation, to contain chemical or infective agents until the appropriate countermeasures can be taken.

Rapid Safe Calculation of Fluid Replacement

Official estimates had predicted the military medical services would have to look after 4,000 burn casualties. Warehouses and factories were quickly converted into makeshift hospitals. Even military doctors with the experience of large training exercises would be hard-pressed to look after such numbers.

For the problem of fluid resuscitation following burn injury, it became apparent that the standard formulas so beloved of medical textbooks and examinations would simply not work under these circumstances. By using the single standard fluid (lactated Ringer's solution) for resuscitation and assuming all soldiers were of a uniform standard weight, the mathematical calculations were worked out beforehand. By these means the *Battlefield Burns Table* was produced. The fluid deficit could then be simply read off a chart on the wall (or tent flap).

The capacity of this system was increased by transferring the figures onto a disc. This allows a range of body weights to be added so that adult and pediatric patients can be treated. In this way the *Burn Wheel* was born.(*4*) This device now has a much wider application and has already been used to advantage in many civilian settings, most notably in disasters where there are numerous burn victims and a shortage of properly trained burn specialists.

Summary

Considering the vast expenditure both in cash and human terms, it can hardly be said that war is good for medicine. Resources can be diverted away from areas of need and possibly be misused. Certainly, the last has not been heard of the many problems from which personnel who served in the Gulf are still suffering. Yet, as with the space program and other areas of concentrated effort and expenditure, there have been spin-offs. It is important that the maximum benefit for everybody, both military and civilian alike, be recouped.

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Dr. Bennett is with the Department of Otolaryngology, University of Manchester, UK. Dr. Milner is a former lieutenant colonel with the Royal Army Medical Corps and is now in the Division of Plastic Surgery at the University of Texas Medical Branch, Galveston, TX. Dr. Gherardini is with the Department of Plastic Surgery at the M.D. Anderson Cancer Center, Houston, TX.

Ready or Not, ...

CDR Michael J. Wendling, MSC, USNR

Suddenly, without provocation on 2 Aug 1990, Saddam Hussein invaded his Arab neighbor, the peaceful nation of Kuwait. His devastating blitzkrieg-like attack and the acts of torture and brutality inflicted upon this tiny, unprepared country stunned the world.

Fortunately for us, this deadly "game" started by Saddam Hussein was played in reverse. Using the element of surprise, he accomplished his initial objective of capturing Kuwait and then, inexplicably, he paused indefinitely. The reason for his unwillingness to advance was not understood by Western Powers, but unlike the game of hide and seek, where the countdown to readiness comes before the pursuit, Saddam Hussein sought first to capture his prey and then count.

The world held its breath as this coiled, unpredictable cobra lay poised and ready to release its lethal venom. But Saddam Hussein continued to count and count, as days turned into weeks and weeks into months. His decision to wait would prove to be his most significant strategic mistake.

He may not have intended to advance, thinking the world would not or could not act to counter his aggression, but his miscalculation proved his undoing. The United States took the lead in building a coalition to meet this threat to world stability and economic collapse.

The lessons learned from this conflict have all been well documented and addressed in the Medical Readiness Strategic Plan. The intent of this article, however, is to describe and explain the program developed in response to many of the problems encountered regarding the mobilization of reservists.

This initiative is the Navy Mobilization Processing Site (NMPS) program. The "True North" of the Reserve component is mobilization readiness. The Navy has acted aggressively during the past several years to improve the mobilization process. A brief explanation of this program is necessary to understand its importance and implication for Navy medicine.

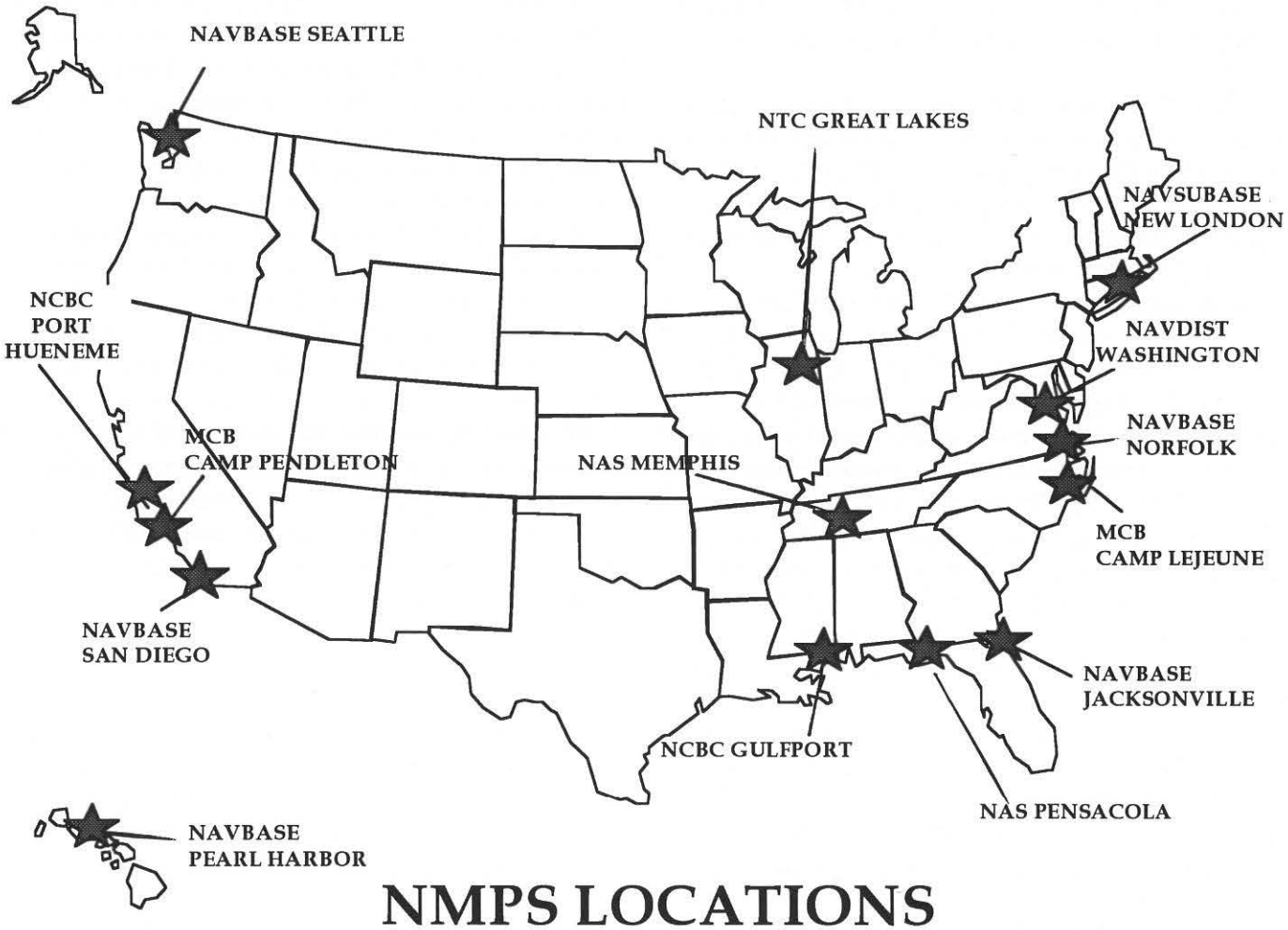
The NMPS program was a business process improvement developed by the Chief of Naval Operations (CNO) in response to the regional Commanders-in-Chiefs (CINC) requirement to receive fully processed reservists in support of operational plans. This program was established to ensure the complete and rapid processing of reservists in response to a Presidential Reserve Call-Up which is critical to the conduct of a conflict.

The NMPS program instituted a new two-step mobilization process for the Ready Reserves. When activated, Navy and Marine Corps reservists report to their reserve center or activity to pick up their personnel and medical records. They then proceed to one of *only* 14 mobilization processing sites throughout the country (vice the 200 plus sites used in Operation Desert Shield) to complete the mobilization process. The Marine Corps refers to this location as the Site of Initial Assignment (SIA).

These sites were selected because they possess the infrastructure to support the complete processing of reservists. (Refer to map for names and location of sites.) Due to the large number of reservists mobilizing from certain geographic areas, several sites will support 2-3 Personnel Support Detachments (PSDs) which will perform the same functions as the primary site.

Each of these processing centers will perform the following functions: pay and personnel processing, legal services, family assistance services, medical and dental screening, uniform and equipment distribution, and automatic tracking and reporting. Reserve Personnel Mobilization Teams assigned to and coordinated by the Local Area Commander for Mobilization will do the processing.

The goal is to process 200 reservists per day at each of the 21 PSDs with each individual completely processed in 1-3 days. The consolidation of the mobilization process



NMPS LOCATIONS

for the Ready Reserve will produce three distinct outcome measures.

First, delays for the reservist when reporting to his/her gaining command will be greatly reduced. Secondly, administrative problems for operational commanders will be eliminated. Thirdly, this program will ensure the CINC and other operational commanders that reservists will arrive when scheduled in the Timed Phased Force Deployment document and be swiftly integrated into their command in support of the operational plan.

There is also a psychological outcome of this program for the reservist. It will provide the individual reservist with assurance that his/her family's medical, financial, and legal needs will be addressed during his absence. This intangible factor must be satisfied to permit the reservist to concentrate fully on performing his/her mobilization role.

The remainder of this article will focus on the medical and dental screening functions as part of the mobilization process. The routine screening process may not be performed in the medical treatment facility (MTF), but rather at a local facility such as an airplane hangar or reserve center drill deck which could accommodate large numbers of individuals as well as the required processing stations. The MTF at each site is responsible for developing a plan of action detailing how the medical and dental screening functions (including logistical concerns) will be performed.

The medical staffing model used to process reservists was developed at the Bureau of Medicine and Surgery. The model validated that a staff of 58 medical personnel would be required to screen/examine 200 individuals per day. Each of the 21 Personnel Mobilization Teams would therefore include 58 Medical Department personnel. The proposed breakdown by corps consists of 6 physicians, 6 dentists, 2 physician's assistants, 2 nurses, 1 administrative officer, 29 hospital corpsmen, and 12 dental technicians.

These reserve personnel are not currently on board; however, they are projected to be included in the Chief of Naval Personnel Program Objective Memorandum 2000. If a major regional contingency occurred today, very

limited active duty resources would be available at the NMPS MTF to perform the medical screening of recalled reservists.

Medical screening at mobilization ensures that each reservist is physically qualified to support the CINC as well as establish a baseline medical condition for each individual. At demobilization, medical screening will document the presence of disease or injury which was not present prior to recall to active duty.

In an effort to prevent a reoccurrence of the situation that created the Gulf War Illness Syndrome, the Office of the Secretary of Defense for Health Affairs (OSD(HA)) developed a detailed, comprehensive medical surveillance program. This program was established to ensure documentation of the condition of servicemembers returning from contingencies. This program requires a medical and psychological assessment and screening of all personnel within 30 days of returning to their predeployment position to determine their medical condition as a direct result of being deployed. In addition, each individual would also receive a tuberculosis skin test 90 days after redeployment.

The NMPS program exceeds the OSD(HA) directive and reflects the Navy's policy to provide a complete medical examination (i.e., physical) for all service personnel immediately upon return from deployment. For reservists this means they must receive a physical *prior* to release from active duty. Only then can war-related symptoms be documented and evaluated. The tuberculosis skin test will be done through the members reserve activity 90 days postdeactivation.

The impact of treating large numbers of injured or disease-laden reserve personnel in addition to active duty casualties has major implications for military MTFs. It is very unlikely that all Navy and Marine Corps patients will be treated in Navy facilities, especially at reduced staffing levels. Firm contingency plans must be developed now to utilize other avenues of care to treat the overflow of patients (e.g., the VA, TRICARE, NDMS).

In addition, both during mobilization and demobilization, the MTF supporting the NMPS will experience a tremendous increase in the use of supplies and equipment normally reserved for routine peacetime health care. This unplanned drain on the limited resources of individual facilities will undoubtedly stress their capability to provide care to individuals in their catchment area. Furthermore, OSD(HA) has taken the unprecedented action of waiving the CHAMPUS deductible for the families of recall reservists and authorized their enrollment in TRICARE. These actions will further impact the MTF.

The NMPS program was officially stood-up in October 1995. The CNO directed that the system be implemented for the Presidential Reserve Call-Up for Operation Joint Endeavor in Bosnia. Although the number of Navy and Marine Corps reservists was small, this real-world contingency presented an excellent opportunity to test the efficiency and effectiveness of this program.

Approximately 370 reservists have been mobilized in support of Operation Joint Endeavor. Twelve of the 14 sites have been utilized to date during this operation, and many lessons learned have been generated as a result. The Bureau of Naval Personnel considers this test of the NMPS program a success story. The medical and dental screening function has discovered a number of existing conditions which would have become an administrative burden to the CINC. Most of these conditions were corrected in several days and the individual was then mobilized. Several reservists, however, had medical or dental problems which prevented them from being mobilized.

Conclusion

The NMPS program is now the quickest and most efficient method of mobilizing reservists as well as documenting their war-related illnesses and/or injuries upon deactivation. The implementation of the NMPS program during a large scale Presidential Reserve Call-Up will have significant and far-reaching implications for Navy medicine. Planning must begin now to determine how the Medical Department will address the concerns expressed in this article. Continued development and resourcing of the NMPS program and staffing of the Personnel Mobilization Teams *must* be on the critical path for the successful prosecution of future operational contingencies.

In a progress report message on NMPS dated February 1996, the Chief of Naval Personnel, VADM Skip Bowman, validated the efficacy of the program when he stated: "From our perspective, we are making progress. Fleet, Unified, and other Commanders are receiving better-prepared, mission-focused reservists in a timely manner. Most importantly, recalled reservists and their families are receiving the care they deserve."

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CDR Wendling is Director of the Mobilization Planning and Fleet Support Division (MED-72), Bureau of Medicine and Surgery, Washington, DC.

History of Navy Medicine in Annapolis

Karen Coffman

Early in August 1845 CDR Franklin Buchanan was asked to draw up a plan for the Naval School. West Point was used as a pattern for organizing the school. An applicant for admission to the Naval School had to be of good moral character, from 13 to 16 years of age, and accepted by the surgeon of the institution as free from any physical defects or disease that would disqualify him from performing the active and arduous duties of a sea life.

In 1845 Surgeon Edmund L. DuBarry became the first head of the medical department at the Naval School in Annapolis, MD. He visited Annapolis that summer and following his visit requested to have his orders changed. He wrote a note to his son who was then a plebe at West Point describing his new duty station as . . . "the dullest and most horrible place in the U. States—it is very old, and I do not suppose a house has been built there in 40 years—the place is finished and will not improve. . . . confound the place I hate the thought of it."

Surgeon John A. Lockwood, a graduate of Dickinson College then became the new head of the medical department. Surgeon Lockwood employed part of a building already in use by midshipmen. This building was described as a "rather more pretentious two-story building" which at one time housed numerous midshipmen. As "the noisy and boisterous element always congregated there, it became known as Rowdy Row," according to RADM Franklin in his book *Memories*. This was the building Surgeon Lockwood used to set up a dispensary and adjoining rooms for sick bay. He had a female nurse to help him. However, her time was taken up attending to a midshipman during a protracted illness, so Surgeon Lockwood requested a hospital steward be assigned to look after the midshipmen in sick bay.

After a midshipman was transferred to the Naval Hospital Philadelphia, PA, the Secretary of the Navy, George Bancroft wrote in a letter to CDR Franklin dated 8 Nov 1945: "I request that you will inform the Department what arrangements, if any, have been made at the Naval School establishment, for medical treatment of the sick connected with the School, separately and apart from their quarters, or sleeping apartments."

From *Historical Sketch of the United States Naval Academy* by

Naval Hospital Annapolis (1846-1857)

Professor James Russell Soley written in 1876 comes the following bit of information: "In 1846 the foundation of a hospital was laid on the Plain below the Superintendent's house near the old mulberry tree."

The first structure at the U.S. Naval Academy to be used as a hospital was a small four-room wooden building constructed in 1846 on the parade grounds. The two rooms on the upper floor and an adjoining bath were occasionally used for patients. On the lower floor was a dispensary, office, and waiting room from which a small storeroom was partitioned. Surgeon Lockwood went to Baltimore in December 1846 to obtain furniture for this new hospital which was almost completed.

Surgeon Lockwood taught chemistry as well as serving as the medical officer. He taught "steam" after the instructor of that course left and also lectured in international law. He was very effective in his discipline of midshipmen. Surgeon Lockwood considered "his most valuable service to the Navy" the publication of his book, *Flogging in the Navy*. He stayed until December 1849 when he was sent to serve in the East India and Mediterranean squadrons.

The construction of the second hospital, a more imposing structure of three stories, began in 1852 and was completed in 1853 in the vicinity of the present Officers' Club. It was a brick three-story building. According to Albert L. Gihon, Medical Inspector, the basement originally housed the kitchen, furnace room, and cellars. On the first floor were four rooms occupied as quarters by the assistant surgeon general and the apothecary, and as a general office and reception room. On the second floor were four corresponding rooms intended for wards and a small dispensary.

In April 1861, with the Civil War becoming too much for the Academy to ignore, the boys from the South were released to go home. The Northerners boarded the old frigate USS *Constitution* which sailed on 25 April to Newport where, the Army gave them permission to use Fort Adams as a temporary home for the Naval Academy. It was a crowded and somewhat chaotic 4 years.

Naval Hospital Annapolis (1857-1871 and 1876-1906)

In the summer of 1865, following the Civil War, the Academy returned to Annapolis. Four years of war and neglect had taken a toll on the grounds, and the morale and academic standards of the Academy had deteriorated. VADM David Porter became Superintendent that fall and determined to begin a new era in Annapolis. While the country was in its reconstruction period, he instituted a massive expansion and redevelopment program at the Academy. In addition to rebuilding classrooms and dormitories, 67 acres known as Strawberry Hill were purchased for $19,000 in 1868. "Graveyard Creek separated the new property from the academy grounds." In 1869 another 46 acres were purchased for $15,218.75 including Prospect Field, on the north side of State Road, Lawrence Field and the USNA gardens on the west side of King George Street. On a high point of Strawberry Farm planners laid out a cemetery for the burial of officers and seamen; a new park with winding woods and paths adjoined it.

Porter directed the third hospital be constructed on a plateau approximately 63 feet above sea level overlooking the Severn River on Strawberry Hill in the vicinity of what is now the Perry Circle housing area. This hospital was completed in 1871 at a cost of $200,000. All cases requiring removal from their quarters were sent there.

A "Report of the Board of Visitors" dated 1870 made the following statement: "The new hospital, which it is expected will be completed and ready for occupancy in the autumn, is a commodious and substantial structure. . . . The wards, as far as we could judge in its present unfinished state, are airy and well lighted, and spacious enough to accommodate the sick and disabled of the Academy and practice ships for years to come."

ADM Porter suggested that it be in the shape of an anchor. From the end of one fluke of the anchor to the other end was 305 feet and 65 feet from front door to back door. The rooms were magnificently and elaborately furnished with heavy brussels carpet, fine walnut sofas, chairs, and settees, tastefully covered with rep silks. In all, the building could furnish accommodation for nearly 300 patients.

"In front of the hospital was a large fountain and walks and a drive of about three miles in circuit is nearly complete—the bed of the road resembling the New Orleans streets."

It was in use until the summer of 1876 when it was abandoned because of its close proximity to the swamps along the river and the high incidence of malaria among patients and staff. The community later dubbed it "Porter's Folly."

Between 1871 and 1876 the second hospital continued in use as a dispensary. With the closing of the third hospital on Strawberry Hill, the second hospital building was enlarged and altered and resumed service as a hospital. The Surgeon General authorized transfer of protracted cases by carriage to the Naval Hospital Washington, DC.

CDR William T. Sampson, the Academy's 13th Superintendent, who revived athletics at the institution, provided an interesting medical note. In 1882 a Navy football team was formed which played Johns Hopkins for 3 years. By 1886 Navy's football season had expanded to six games. The first Army-Navy football game took place in 1890. During this period, Medical Inspector T.C. Walton became alarmed at the number of excuses and sick days created by the game. In 1895 he addressed a letter to the Superintendent recommending prohibition of football and encouraging a less harmful athletic sport. His recommendations were apparently ignored and the sport continued at the Academy.

During this period the Academy continued making expansion plans. Ernest Flagg, a well known New York architect, created a comprehensive plan for the Academy that would include demolition of existing buildings, material alterations to the topography of the site, and new buildings. Although Mr. Flagg's plan was approved, no action was taken until 1898 when Congress appropriated $1 million to begin reconstruction. In 1899 an additional appropriation of $720,000 was requested and approved to construct the buildings of granite instead of brick.

The fourth hospital was commissioned on 27 April 1901. Mr. Flagg designed the building in a "pavilion plan," similar to the plans of many colonial buildings with its central administration building and double pavilion wings. The plan was studied for several years before advertising for bids. Only two bidders responded.

Naval Hospital Annapolis (1871-1876)
"Porter's Folly"

During fiscal year 1906 a diphtheria epidemic reinforced the decision to build a hospital apart from the main campus.

Construction of the main building began in 1906 at a cost of $200,000. The construction consisted of the main building and four separate wards made of brick and granite with a slate roof. Acting Secretary of the Navy Truman H. Newberry accepted occupancy of the building in a letter dated 23 Jan 1907, and patients were first accepted in late April 1907. In 1910 and 1911 four permanent wards were added on the west side and four to the east side of the main building.

During World War I temporary wooden structures were erected for use as additional wards, and in 1916 the hospital got a new heating system. In 1917 additions greatly expanded the facilities for treating the sick. The staff of the hospital at that time was 11 officers, 10 nurses, and 60 hospital corpsmen.

Shortly after 3:00 a.m. on 16 Dec 1927, fire broke out at the Annapolis Emergency Hospital. Doctors from town and the Naval Academy treated firefighters and looked after the patients. As a humanitarian gesture, the Naval Hospital accepted patients from the hospital after it was destroyed by fire and housed them on the third deck with three or more patients in a room. The Naval Hospital admitted and operated on emergency cases beyond the scope of the temporary town hospital building, sterilized dressings, and took X-rays for Annapolis physicians for 9 months following the fire.

Future Surgeon General H. Lamont Pugh was Assistant to the Chief of Surgical Service from 1931 to 1933. He was one of three watchstanding officers in his 3 years at the hospital and stood 335 officer-of-the-day watches. He wrote in his autobiography (*Navy Surgeons*) of his first experience using maggots therapeutically to rid a midshipman's wound of necrotic tissue. He also recalled the sad consequences of drinking and driving. Dr. Pugh later served as Surgeon General from 1951 to 1955.

In 1939 a new three-story West Ward building of permanent construction replaced the temporary World War I wooden structures. It housed two wards, the operating suite, X-ray department, eye, ear, nose and throat clinic, physical therapy department, and other spaces.

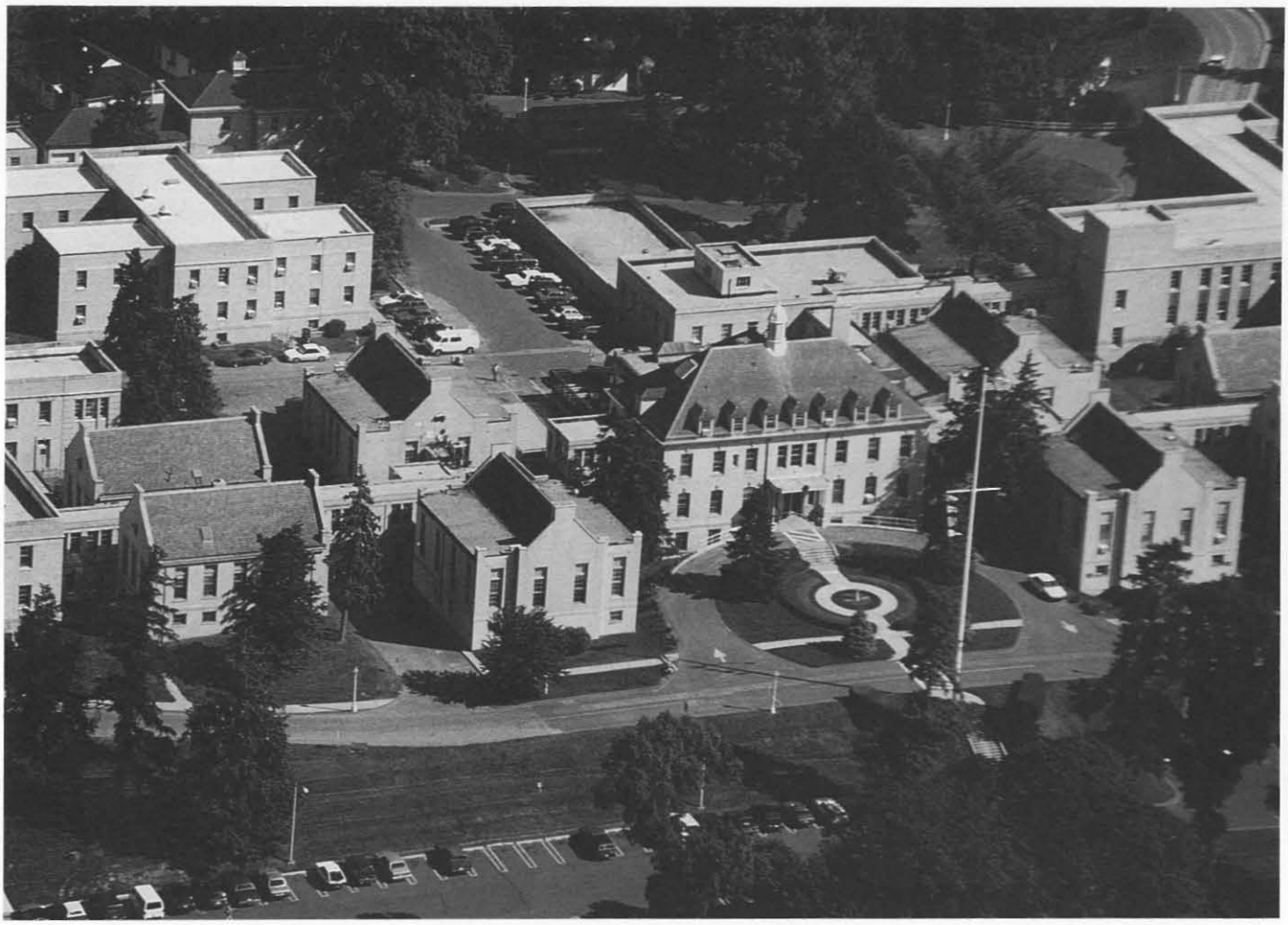
In 1941 a new three-story East Ward building was built containing two wards, a dependents' ward, labor and delivery rooms, nursery, dental office, medical storerooms, finance office, and morgue. That year also saw the construction of a new subsistence building containing a complete food service department, an auditorium, and a medical library.

During World War II the hospital functioned at or near peak capacity. Unlike many naval hospitals, however, no temporary wards were constructed for care of patients. The peak inpatient census during World War II was 332. The Korean War had little effect on the hospital's work load.

In January 1965, along with other major organizational changes in the Department of the Navy, the Severn River Naval Command was abolished and this hospital came under the command and primary support of the Bureau of Medicine and Surgery and the coordination control of the Commandant, Naval District of Washington. The 1967 Command History noted six classrooms available for use by midshipmen while on the sicklist.

Naval Hospital Annapolis was disestablished on 1 June 1979 and on the same date the Naval Regional Medical Clinic Annapolis came into being. In June 1983, as part of the medical department restructuring, the word "Regional" was dropped and the facility renamed the Naval Medical Clinic, Annapolis, MD.

Navy medicine also had a presence in Bancroft Hall, the Naval Academy's huge dormitory, since the first two wings were completed in 1906. Initially it was under the colonnade in the basement. Less than a year later, the Sick Quarters were moved to the fourth floor of Bancroft because the basement was too dark and damp. The Naval Dispensary was established to treat officers and their fami-



Naval Hospital/Clinic Annapolis today

lies and was also located under the colonnade in Bancroft Hall in 1907. Five years later it was moved to the basement of Mahan Hall where more room was available.

According to an article in the October 1935 *U.S. Naval Institute Proceedings*, four physicians were constantly on duty in the Sick Quarters in Bancroft Hall. "Here all physical examinations on midshipmen are conducted annually, protective inoculations are given against communicable diseases, and sick call is conducted twice daily. Midshipmen with mild conditions not demanding special diet or bed treatment over 24 hours are retained in Sick Quarters, but others in need of longer treatment are hospitalized at the local Naval Hospital. In addition, the staff in this location handles problems in hygiene that arise in connection with the mess hall, the dormitories, and the Naval Academy Dairy."

During 1994 plans were made to renovate and air condition Bancroft Hall. The Clinic underwent extensive renovations to absorb the clinics from Bancroft Hall, and in May 1995 the Clinic consolidated all clinics on the "hill" ending Navy medicine's physical presence in Bancroft. Corpsmen are still available each weekday morning in Bancroft to treat midshipmen for minor problems.

The Clinic continues to provide health services to the Academy's Brigade of Midshipmen as well as active duty members, their families, retirees, and their families living and working in the Annapolis area. Medical personnel not only staff clinic spaces but also cover special events such as parades, helicopter landings, sailboat races, cruises, and athletics. Plans are in the works to merge current care into a managed care format bringing medical care at the Naval Medical Clinic Annapolis into the next century. ❑

Ms. Coffman is Public Affairs Officer at Naval Medical Clinic, Annapolis, MD.

Effect of Personality Profiles on Relapse Rates of Alcoholics

LT Mary Cook, MC, USNR
LT Anita Musbaum, MC, USNR
CDR Stanley W. Raczek, MC, USN
CAPT Virgilio Lopez, MC, USN

Personality disorders are enduring patterns of "inner experience and behavior that deviate markedly from the expectations of an individual's culture."(*1*) The character pathology that defines personality disorders is "deeply entrenched and difficult to modify."(*2*) Many investigators have noted that the coexistence of personality disorders complicates the treatment of other (Axis I) psychiatric syndromes such as depression and eating disorders.(*3,4*) Therefore, it seems likely that the treatment of alcohol dependence would be made more difficult and complicated by the coexistence of a personality disorder. Relapse rates would be greatly impacted.

Both alcohol dependence and personality disorders constitute a tremendous burden to the Navy. Affected individuals are erratic and unreliable in the performance of their duties, thus jeopardizing whatever mission they are assigned. Their impaired performance poses serious, potentially lethal risks to themselves and others. These individuals require extensive and costly treatment; frequently they must be separated from active duty despite years of specialized training.

We examined the relationship between relapse rates of alcoholics and personality profiles and proposed that relapse rates would be negatively impacted by a high degree of character pathology. The patterns revealed by this study may be used to modify existing evaluation and treatment processes for alcohol dependence, to diminish the profound cost that this disorder pose to the Navy in terms of financial and institutional loss. Additionally, the patterns of treatment failure revealed by this study may help identify patients who are poor risks for alcohol rehabilitation. These patients may be identified in advance and administratively separated rather than made to undergo costly and lengthy treatments which are doomed to fail.

Subject and Methods

All patients who were admitted to the Alcohol Rehabilitation Department (ARD) were routinely evaluated during the first few days of admission, which included the Personality Disorder Examination (PDE). The PDE is a semistructured clinical interview designed to evaluate personality profile, based on DSM-IIIR diagnostic criteria for personality disorders and traits (i.e., Axis II diagnoses). The PDE has been used widely in international studies and proved to be valid and reliable.(*5*) Each personality disorder trait is scored by 0, 1, or 2. A "0" is scored when the patient denies the presence of a trait, a "1" when the patient "partially" endorses a trait, and a "2" when the patient "completely" endorses a trait. Criteria for a personality disorder are fulfilled when there are a sufficient number of 2's. A "dimensional score" is calculated by totaling all of the numbers for a given personality disorder. This score provides an assessment of the degree of character pathology, even if there are not sufficient criteria to diagnose a personality disorder.

The charts and the PDE results of 90 Navy, Marine, and Air Force servicemen, enlisted and officers of both

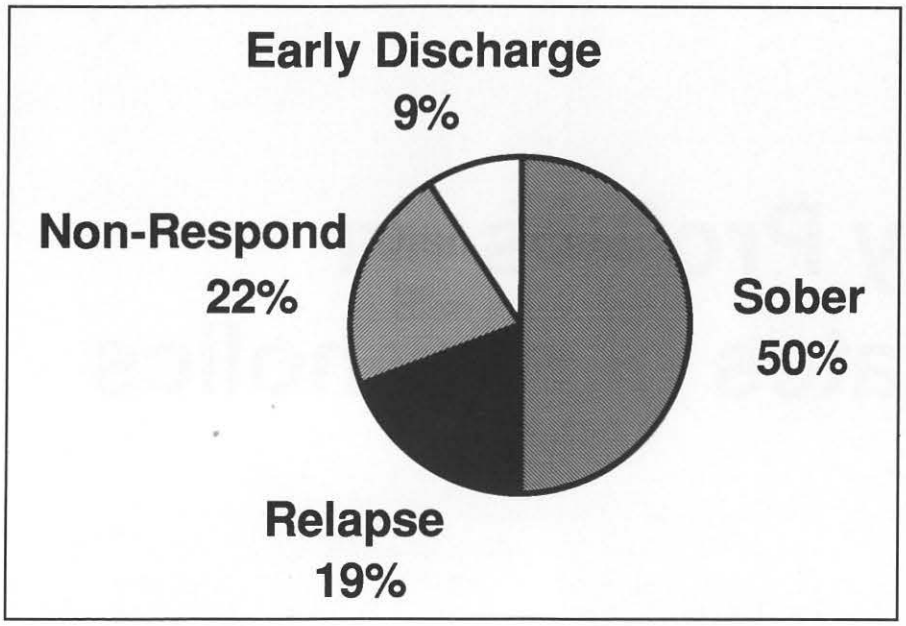


Figure 1
Distribution of Treatment Outcomes

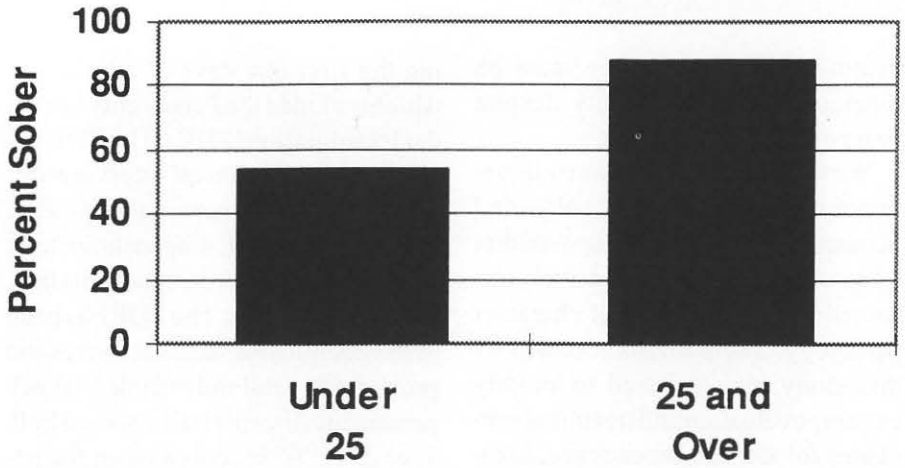


Figure 2
Percent Treatment Success for Patients in the <25- and ≥25-Year Age Group

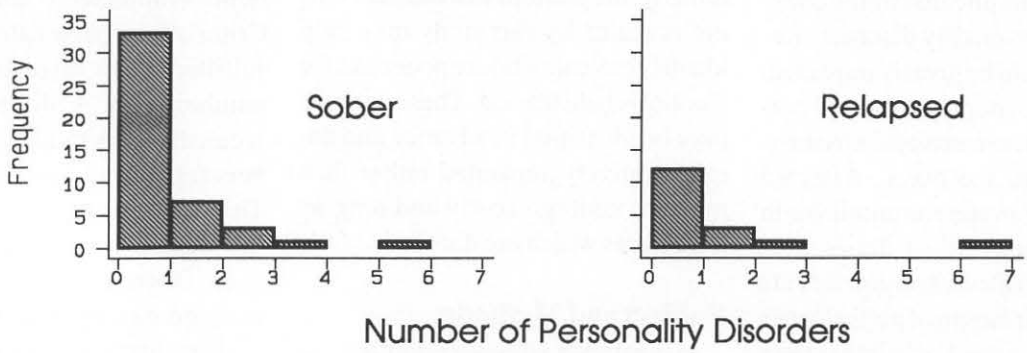


Figure 3
Frequency Distributions of Number of Personality Disorders for Sober Versus Relapsed Groups

sexes, who were admitted consecutively for inpatient alcohol treatment to the ARD were reviewed. The charts of patients with a history of a major psychiatric illness such as a mood disorder or psychosis were excluded, as were those of patients with a history of abuse of a substance other than alcohol.

All patients admitted to the ARD were diagnosed as alcohol dependent by a referring provider, usually a military psychiatrist or their Command Alcohol Assessment Coordinator (CAAC). The diagnosis of alcohol dependence was verified by the ARD psychiatrist who conducted a clinical interview with each patient, using DSM-IIIR criteria. Patients had to meet the DSM-IIIR criteria for alcohol dependence to be eligible for admission to the ARD.

One year after treatment, as part of a routine aftercare program, all patients were assessed via a detailed questionnaire, for evidence of relapse. The aftercare files corresponding to the 90 charts selected for the study were reviewed. The charts of patients were divided into two groups; those who relapsed verses those who remained sober. "Relapse" was defined as resumption of drinking at any time during the year following treatment. The demographic categories, including sex, marital status, military status, and mili-

tary branch, were compared between the sober and relapsed groups, using a Fisher's exact test. The percent sober for each variable within a category was compared with that of the other variable in the same category. The percent sober was calculated by dividing the ratio of sober patients over total patients for a given variable. The numbers and types of personality disorders were compared using a Fisher's exact test; the dimensional scores, using a logistic regression; and the mean dimensional scores for each personality disorder, using a t-test. The frequency distributions of personality disorders were compared using a form of t-test designed for unequal variances.

Results

The treatment outcomes are displayed in Figure 1. Only 82 of the 90 patients completed treatment. The eight charts of patients who did not complete treatment were excluded from the statistical analysis comparing the sober and relapsed groups and were labeled "early discharge." In addition, the aftercare files of 20 patients were not complete. These 20 patients either could not be reached or failed to respond to the aftercare questionnaire and were labeled "non-respond." These 20 charts were also excluded. The 62 remaining charts were used for statistical analysis.

Demographic variables are displayed in Table 1. The demographics between the sober and relapsed groups were not significantly different with the exception of age. Age was divided into an "under 25" and a "25 and over" group. Patients in the "25 and over" group were much more likely to remain sober (p=.004). The percent treatment success for the two age groups are also displayed in Figure 2. The numbers of each personality disorder, as well as the total number of personality disorders, are tallied for each treatment outcome in Table 2. In addition, frequency distributions of the sober and relapsed groups are displayed in Figure 3. There were no significant differences in the numbers of personality disorders between the two groups.

Finally, the dimensional scores for

Table 1
Percent of Patients Remaining Sober 1 Year After Treatment for Demographic Variables With *p*-values of Tests Between Categories of Each Variable

VARIABLE	PERCENT SOBER	*p*-VALUE
Sex		**0.176**
Male	**70%**	
Female	**100%**	
Marital Status		**0.113**
Single	**65%**	
Married	**79%**	
Divorced	**100%**	
Separated	**50%**	
Military Status		**0.625**
Active Duty	**73%**	
Dependent	**(1 of 1)**	
Retired	**(1 of 2)**	
Branch		**0.677**
Navy	**76%**	
Marine Corps	**64%**	
Air Force	**67%**	
Age		**0.004**
Under 25	**54%**	
25 and Over	**88%**	

Outcome	Sober	Relapse	Early Discharge	Non-Respond	Total # Pts
# Patients	45	17	8	20	90
Paranoid	3	2	1	2	9
Schizoid	0	0	0	0	0
Schizotypal	0	0	0	0	0
Antisocial	4	3	2	2	11
Borderline	4	2	1	2	9
Histrionic	2	0	1	0	3
Narcissistic	0	2	1	0	3
Avoidant	1	1	1	1	4
Dependent	1	0	1	0	2
Obsess-Compuls	2	0	1	0	3
Passive-Aggress	3	1	2	0	6
Sadistic	0	0	1	0	1
Self-Defeating	1	1	1	0	3

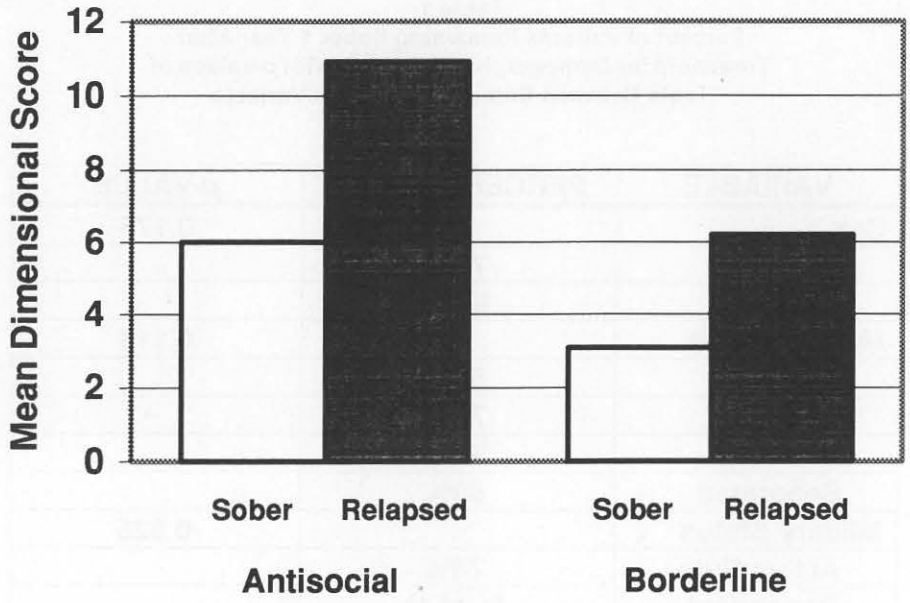


Figure 4
Mean Dimensional Scores for Antisocial and Borderline Personality Disorders in the Sober and Relapsed Patient Groups

each personality disorder were compared between the sober and relapsed groups. The scores were not significantly different between the two groups except for antisocial and borderline personality disorders. The relapsed group had significantly higher dimensional scores in both the antisocial and borderline categories ($p=.018$ and $p=.009$, respectively). The variability between the two groups was not significantly different. The relapsed group also had significantly higher mean dimensional scores in both the antisocial and borderline categories ($p=.014$ and $p=.007$, respectively). The mean dimensional scores for borderline and antisocial personality disorders are displayed in Figure 4.

Discussion

The relapsed group had significantly higher dimensional scores for borderline and antisocial personality disorders than the sober group. This is evidence that patients with more borderline and antisocial character pathology are more likely to relapse. In addition, patients under 25 were significantly more likely to relapse than patients 25 and over. This makes sense intuitively but was not a part of our original hypothesis.

Our data did not support the hypothesis that alcoholics with personality disorders, as measured by the PDE, are more likely to relapse than alcoholics without personality disorders. However, the study was limited due to the small pool of patients. Only 62 of the 90 charts reviewed were of patients who both completed the treatment and the aftercare questionnaire. There were 20 patients who either could not be reached or failed to respond to the aftercare questionnaire. We might speculate that these patients did not respond because they had relapsed and were ashamed to respond or they moved frequently due to instability generated by alcohol abuse. Our results may have been significantly skewed by this factor. Furthermore, meeting criteria for a personality disorder is more difficult using the PDE than is usually the case in clinical practice. This is due to the fact that partially endorsed traits were not considered by the PDE as criteria for diagnosis.

The numbers of personality disorders in this study were very small, and this may have limited the value of our conclusions. However, the dimensional scores, which include both partially and completely endorsed traits, were very large in many patients. The discrepancies between the numbers of personality disorders and dimensional scores is evidence that there may have been a substantial portion of patients failing to meet criteria for personality disorders by nonetheless having a high degree of character pathology. Perhaps future study, using a larger subject pool and a different means of diagnosing personality disorders, would reveal a tendency for patients with antisocial and borderline personality disorders to relapse.

There are many clinicians who would argue that personality disorders cannot be diagnosed in the face of active substance abuse. The controversy is whether the character pathology is a by-product of the substance abuse verses whether the substance abuse arose out of the character pathology. However, criteria for personality disorders were not met unless the patient completely endorsed a trait since age 15. Most patients were not alcohol dependent since that time.

The findings of this study might be used to identify patients at risk for relapse before they enter alcohol treatment. These patients might be offered a modified treatment which addresses character pathology or immaturity. Alternatively, the Navy might defer costly alcohol treatment for these patients and, instead, separate them administratively. Future study is warranted.

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The authors are assigned to the Departments of Psychiatry and Clinical Investigation, Naval Medical Center, San Diego, CA.

In Memoriam

CDR Mary T. Sproul (Ret.), blood technology pioneer, died 25 Feb 1997 at the National Naval Medical Center (NNMC), Bethesda, MD. She was 88.

Born in Washington, DC, CDR Sproul received bachelor's and master's degrees in education and biology from George Washington University and then taught at the Holton Arms Academy and Friends School. She left the Friends School in 1938 and began many years of research on blood plasma at the old City Hospital in Washington under a grant from Baxter Laboratories.

After Pearl Harbor, CDR Sproul worked for the Army operating a joint blood bank with the Navy at the old Naval Medical Center at 23rd and E. Streets, N.W., Washington, DC. She sought to join the newly formed WAVES in 1942 but Surgeon General Ross McIntire said he could not spare her to go to indoctrination school. Some months later she was commissioned a lieutenant junior grade but was not required to attend a training school because of her considerable experience. Instead CDR Sproul continued her work on blood plasma and clinical testing as well as operating an active blood donor center.

Future Surgeon General H. Lamont Pugh helped get the blood donor center transferred to NNMC during the war and there CDR Sproul continued her work on blood technology and ensuring the purity of blood and blood substitutes such as plasma and serum albumin. (See Shock Killers, *Navy Medicine*, Jan-Feb 1996.)

CDR Sproul remained at Bethesda until 1950 when she accompanied blood shipments to Korea. She was one of only five female commanders to fly to the war zone with lifesaving blood. There she visited battalion aid stations and MASH units to observe how the blood was being handled and administered. She returned to Korea near the end of that conflict to help the South Koreans set up a blood bank but, when the MASH unit she was staying at came under enemy fire, that mission was never accomplished.

After serving as the Navy representative for BUMED's blood programs and researching improvements in the ability to store and ship blood, CDR Sproul spent 6 months at Long Island City Hospital researching techniques for freezing whole blood and its components.

In 1958 the Navy opened a new laboratory for the study of long-term blood preservation at Naval Hospital Chelsea, MA. There CDR Sproul continued to work on frozen blood and its components. Although she retired from the Navy in 1965, she spent 5 more years doing similar work for the Blood Research Institute in Boston, MA. "Retiring" again in 1971, CDR Sproul carried on her interest in blood technology as a consultant to Haemonetics Corporation and traveled worldwide for that company demonstrating blood separation equipment.

Naval Medical Research and Development Command Highlights

●Two Navy Researchers Receive Award for Excellence in Technology Transfer

CAPT C.H. June, MC (Ret.), and CDR David M. Harlan, MC, from the Immune Cell Biology Program at the Naval Medical Research Institute, Bethesda, MD, received the 1996 Federal Laboratory Consortium Award for Technology Transfer. Technology transfer refers to technology exchange between federal laboratories, private industry, and universities to further develop scientific research through collaborative efforts. In 1987, while researching new strategies for the treatment of combat injuries, Dr. June made the pioneering observation that the engagement of T lymphocytes requires activation of a specific surface receptor on the T cell called CD28. Dr. June and Dr. Harlan significantly contributed to demonstrating that blocking CD28 activation with antibodies and bioengineered molecules prevented T lymphocytes from reacting to foreign protein (or antigen) and rendered them permanently unresponsive (or anergic). This technology, called anergy therapy, has the potential to treat a spectrum of illnesses from the spectacular (organ transplantation) to the mundane (allergic reaction to poison ivy). This technology holds the potential to safely block unwanted immune responses without the severe side effects of current immunosuppressive drugs. Dr. June and Dr. Harlan have established a major ongoing transfer of technology through multiple cooperative agreements between the Navy, private industry, and universities to continue the scientific and commercial development of anergy therapy, the clinical application of which may significantly improve medical treatment for a wide spectrum of human illness. (See *Navy Medicine*, March-April 1997, pp 19-24.)

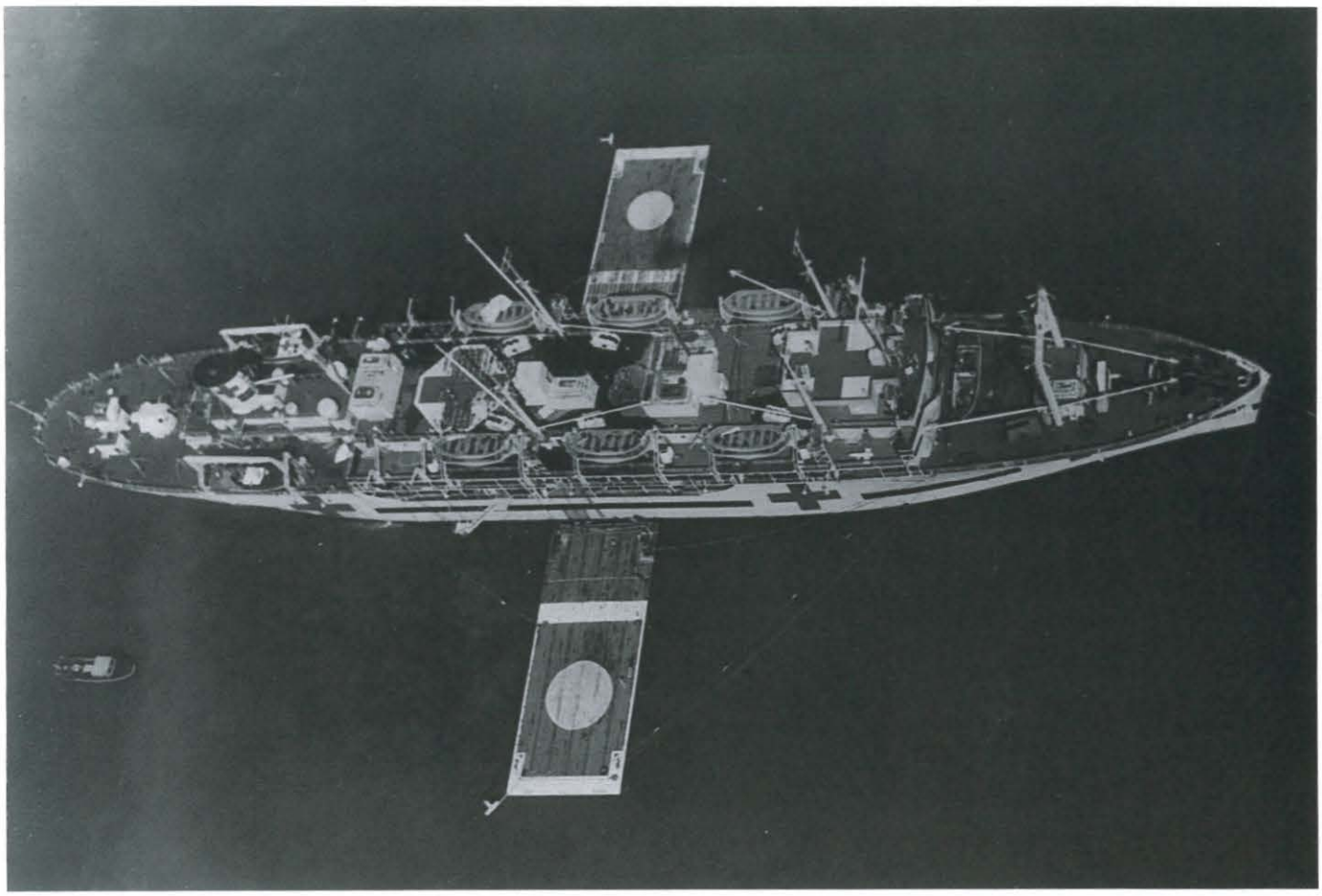
●Sopite Syndrome—A Form of Motion Sickness

Sopite syndrome is a form of motion sickness characterized by drowsiness, fatigue, difficulty in concentration, apathy, mental depression, and other changes not fully understood. Long-lasting sopite-like symptoms have been noted in operationally relevant settings and appear especially characteristic of simulator sickness. As the Navy shifts toward an increased use of simulators and virtual environments (VE) it is predicted that more frequent and stronger sopite effects will be reported. Scientists at the Naval Aerospace Medical Research Laboratory, Pensacola, FL, are involved in a 3-year study to investigate sopite syndrome. The first year of the study focuses on the magnitude of sopite symptoms and performance decrements in operationally relevant training environments. The second year will involve laboratory testing focusing on identifying the provoking stimuli. During the third year scientists will assess the biochemical and physiological changes in individuals susceptible to sopite syndrome. Anticipated products from this research include: (1) recommendations and guidelines for training systems design (conventional and VE simulators), (2) training for medical personnel in the recognition, prevention, and treatment of the syndrome, (3) transition to on-site research of motion and simulator environments, and (4) transition to medical clinical trials of possible drug interventions. This project will provide a more thorough understanding of the basic vestibular, neurophysiologic, and behavioral affects of motion and simulated environments. The results of this study will have applications to other military and civilian modes of transportation and simulation, and will yield a better understanding of certain aspects of the space adaptation syndrome.

●Combined Oral Vaccines to Help Protect Against Infectious Diarrheal Diseases

Prevention of infectious illnesses through improved vaccines is an important component of military medicine. Navy and Army researchers have targeted diarrheal agents for combined vaccine development because, in terms of morbidity and lost duty time, diarrheal diseases pose the greatest threat to deployed U.S. forces during regional conflicts. To achieve a reasonable level of protection it will be necessary to immunize against the three to five most prevalent diarrheal agents. This could be accomplished with a combined vaccine. Combining several vaccines into a single formulation to protect against different diseases has been widely used in clinical practice for many years (i.e., diphtheria-tetnus-pertussis and measles-mumps-rubella vaccines). A joint 2-year project between the Naval Medical Research Institute, Bethesda, MD, and the Walter Reed Army Institute of Research, Washington, DC, is under way to develop and evaluate oral, multiagent antidiarrheal vaccines. The project capitalizes on the Navy's and Army's existing expertise in vaccine research and their recent advances in the development of mucosal adjuvants, time-released microencapsulation techniques, and bacterial attenuation. This study will compare two prototypes: (1) an oral adjuvanted trivalent killed whole cell vaccine against *Shigella*, enterotoxigenic *E. coli* (ETEC), and *Campylobacter*, and (2) a novel vaccine comprised of live attenuated *Shigella flexneri* administered with time-released microencapsulated ETEC colonization factor antigen II (CFA-II). The results of this preclinical study will be critical in Investigational New Drug Applications for Phase I-II trials of any similar vaccines moving into advanced development and human clinical studies.

Navy Medicine 1952



BUMED Archives

Inchon, South Korea: Rigged with landing platforms, USS *Haven* (AH-12) awaits Marine helicopters and their wounded cargoes.

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DEPARTMENT OF THE NAVY
BUREAU OF MEDICINE AND SURGERY
ATTN: MED 09H
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